HARRIS

INTERCOM

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EGYPT MEDIUM WAVE BROADCAST PROJECT

Harris Broadcast Products Division has been awarded the contract to supply all equipment necessary to complete the low power medium wave broadcast network for the Organization of Broadcast Television Federation, OBTF, of the Arab Republic of Egypt. This project involves twenty (20) medium wave sites rebroadcasting two programs originating from Cairo, the capital of Egypt now known as El-Qahira.

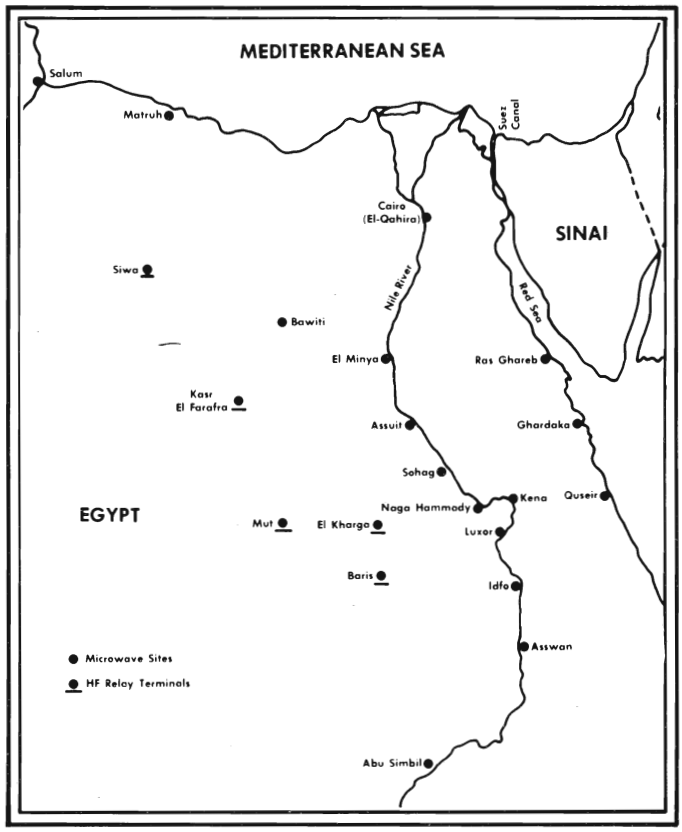
Fourteen of the sites are served by existing or planned microwave links, while the six remote sites will be served by an independent sideband HF space and frequency diversity system operating in the 2 to 21 MHz range. Two (2) 10 kW model RF-745 AR HF transmitters will be supplied by our sister division, Harris R.F. Communications. Two program channels will simultaneously feed the independent upper and lower sidebands, producing redundant broadcast channels. Both transmitters will be fed into a broadbanded HF antenna system designed by TCI.

On the receiving end, four (4) RF-550 HF/ISB Harris R.F. receivers will be fed by separate antennas. A state-of-the-art control/switching system selects the best received output for each program channel, therefore increasing the reliability of the HF link.

Each program channel per site will be supported by a main/alternate medium wave transmitter system and associated program input equipment. Broadcast Products Division will supply thirty-two (32) BC-10H 10kW and forty-eight (48) MW-1A 1kW medium wave transmitters. Four transmitters will be installed per site utilizing non directional vertical radiators. Twenty (20) towers supplied by Rohn will be fed by diplexers/antenna coupling units that have been designed and manufactured by Harris Broadcast Products. All program input equipment will contain the NEW Harris MSP-90 limiter.

Total delivery on a site-by-site schedule must be completed within the next fifteen months. Manufacturing impact includes 12,000 direct labor hours in fabrication, assembly and test - most occurring in the fourth quarter of FY 78/79 and the first quarter of FY 79/80.

OBTF's acceptance of the Broadcast Products proposal was obtained from among a very formidable field of competitors including Continental, Collins, Singer, McMartin and Cetec-Sparta. Our winning strategy was planned by a divisional team directed by Jim Barry, Sales Director for the Mid East. Proposed products were reviewed by Engineering, Costing and



Manufacturing. Vendors such as Rohn, Kohler, TCI, Hewlett-Packard, Tektronix and Electro Impulse were carefully selected by Systems and Purchasing. Customer Service provided detailed training program proposals and spare parts support, while Office Services kept the telex lines open as the need demanded. Traffic studied several shipping alternatives and Program Management provided valuable assistance during proposal preparation, OBTF evaluation and final contract negotiations.

As a result of great Harris teamwork, the OBTF project will establish Harris Broadcast Products Division as the LEADING SUPPLIER of medium wave products in the Mid East...A position that will surely increase momentum of all Harris marketing efforts in this area of the world.

SNOW, SNOW AND MORE SNOW

The first six weeks of 1979 have been wonderful for slipping, sliding and spinning. I say WONDERFUL for the sleds, the toboggan runs and the ice-skates. However, it has been a rough time for driving or walking, as the car fenders and the bandaged body parts indicate. The beauty of the whole scene has led us to forget for the moment the safe driving and walking habits that we have learned from childhood. Had it not been for the efforts of our Maintenance Department (Bob Ward in particular) and the end-loader that has moved much of the white-stuff aside for us, I'm sure the number of accidents would have been even greater. It is still very slippery due to the freezing and thawing that seems to be the rule of the day, and we would like to point out the rule of cars stopping for pedestrians who are walking in the crosswalks. These walks are clearly marked and should be noted by drivers and walkers alike. Remember too, all intersections from the parking lots are not marked for right-of-way, and with the snow piled so high that it blocks visibility it is only wise to stop before you proceed and then take turns when the traffic is heavy.

Our closing thoughts on safety are that:

1. it is still hazardous out there
2. utmost care must be used whether you are driving or walking
3. slow down and give the other fellow a sporting chance
4. always remember that the fundamental rule of driving is as simple as A B C...ALWAYS BE COURTEOUS!!!

Bob Ward and Snow Mover

ORION BUYS HARRIS CAMERAS

Harris TV District Sales Managers Tom Schoonover and Charles Coyle have announced the sale of six (6) Broadcast color cameras to Orion Broadcasting, headquartered in Louisville, Kentucky.

A combined negotiation and demonstration was held with top management of each station, which not only included H. B. Holtman, Director of Engineering for group operations, but the President and General Manager of WMT-TV, Kelly Atherton, WMT's Chief Engineer, Bob Kucera, the President and General Manager of WFIE-TV, Conrad Cagle, and the Chief Engineer of WFIE-TV, Marion Paul. Two TC-80's and one TC-50 were purchased for WMT-TV, Cedar Rapids, Iowa, two additional TC-80's and one TC-50 were purchased for WFIE-TV, Evansville, Indiana.

The demonstration at WMT went so well that we sold the station the TC-50 and TC-80 that were demonstrated so they could get them on the air immediately. Our cameras replaced RCA TK-42's. Our competition was both RCA and Ampex but the superior Harris cameras coupled with good salesmanship got the order.

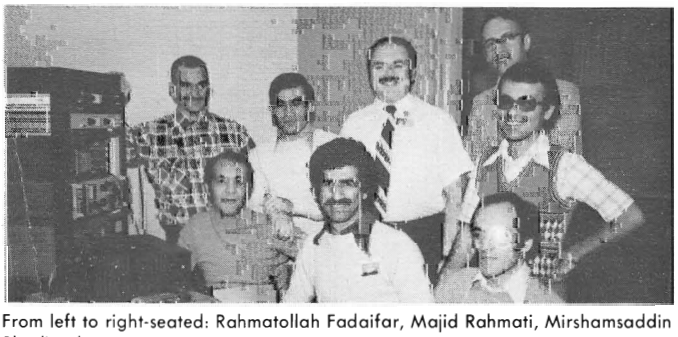
Besides WMT and WFIE, Orion owns three other television stations, two AM and one FM radio stations. Their station in Green Bay, WFRV-TV is the owner of the first TC-80's sold by Harris.

Harris' TC-50 and TC-80 cameras are now operating in twenty-six (26) major United States markets and many foreign markets including Brazil, Venezuela, and Taiwan.

Building 9 Bustles With Business

The Customer Training Area continued to be a beehive of activity through the month of December as it acquired an international flair. All three instructors were involved in separate international training programs—plus a domestic seminar on TC-50A was also conducted. The Iran FM 601-1, Group II training that began October 23 was completed on January 12, 1979. Dave White was the instructor for this group and was ably assisted by the FM Engineering Department in the persons of Bob Weirather, Dave Hershberger and Joe Donovan. Seven representatives of NIRT attended these classes. Rex Sandidge instructed the group from Ondo State in the medium wave equipment program which concentrated on the BC-10 and MW-5 transmitters. This class was comprised of four students from Nigeria and was held from November 20 through December 15. The third international training was conducted by Jerry Powell and Karl Jesness on the BT-25L1. This class was scheduled from December 1 through December 22 for two representatives from Bahrain Television. The fourth course was a domestic TC-50A seminar held December 4 through December 8. George Owens was the instructor and the participants were from the University of Miami School of Medicine, Department of Biomedical Communications.

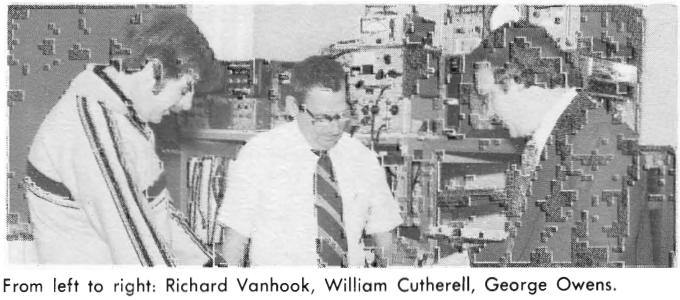
The 1979 training seminar schedule is underway with a MS-15 training session held February 5 through 9 that had six students in attendance.



From left to right-seated: Rahmatollah Fadaifar, Majid Rahmati, Mirshamsaddin Shadjareh.
From left to right-standing: Djamshid Hassas, Mohammadali Sabri, Dave White, Rex Sandidge, and Mehdi Izadyar. All but Dave and Rex are representatives of NIRT.

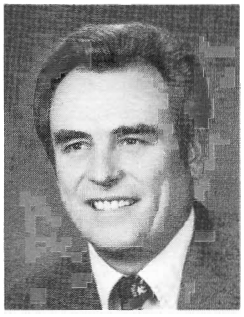
From left to right: Ali Ghuloom Mohammed, Karl Jesness and Sami Mohamed Mohanna.

From left to right: Michael Erin, James Obamoluma, Rex Sandidge, Ife Adejuwon, and 'Bayo Olowofila. All but Rex are from Ondo State.



From left to right: Richard Vanhook, William Cutherell, George Owens.

GENERAL MANAGER'S REPORT



G. T. WHICKER

The good performance of the division continues on its steady course. At this point, shipments, and profits are slightly ahead of plan. Also, both domestic and international orders are ahead of plan. The current instability in Iran has delayed new business development there, but the disruption should not have a significant impact on our current operations. In the long run we expect a continuation of our strong position when political stability is achieved.

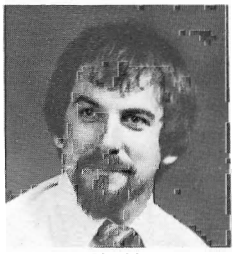
The progress made in the Value Engineering program, and the initial excellent response to the "Ideas for Progress" project, are significant to the future well being of the Division. The Value Engineering effort on the FM transmitters for the Iran program has moved the whole program from marginal to healthy profitability.

In the few weeks that the "Ideas for Progress" project has been in operation, you have submitted over 70 ideas for improvements. The quality of these ideas has been excellent, and they have come from throughout the division. Being able to quickly implement effective cost reductions in our products and operations is critical to our ability to remain competitive in worldwide markets as the competition continues to be aggressive in both the Domestic and International markets. Value Engineering and "Ideas for Progress" will contribute significantly to improving our price competitiveness. Thank you for all your participation in these programs.

I join you in welcoming the great spring thaw!

GUEST COLUMNIST

AUTOMATED TESTING EQUIPMENT



Joe Blackburn

As labor costs continue to increase, the need to reduce the time involved in each test procedure becomes more and more necessary. Our computer aided Automatic Test Equipment is one accurate means of accomplishing the desired results. Harris Broadcast Products Division has developed a strong A.T.E. program that reduces our manufacturing costs (thus our sales prices) and at the same time improves the performance and reliability of our products.

Our A.T.E. program is divided into three (3) distinct areas: Component verification...testing of subassemblies...and functional testing of completed units. We first test printed circuit boards after components have been inserted and soldered. A Zehntel TS-II "bed-of-nails" tester verifies that all components have the right value and have been inserted and soldered properly. The Zehntel tester consists of a computer that is hooked up to a test fixture which has a probe for each unique point on the printed circuit board. A vacuum pump pulls the board down onto the probes, and the computer compares the impedance among all possible combinations of points with the impedance stored in its memory. If it detects an out-of-tolerance value, it rejects the board and identifies the problem area for the operator. Isolating component value and solder short problems greatly reduce the percentage of defective boards before they get to the final test area.

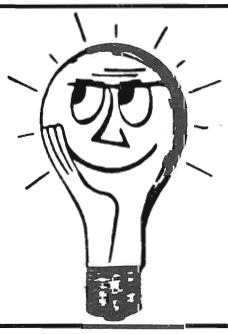
We then use two Hewlett Packard 3055 testers to perform a functional test on the audio plugs in the printed circuit boards. The H.P. 3055 computer "talks" to sophisticated test equipment which is hooked up to the plug-in connector of the board under test. A programmed tape cassette tells the test equipment which functions to exercise and which measurements to test. This equipment is capable of measuring harmonic and intermodulation distortion to .05%, frequency response to ± .05 dB and signal to noise ratio to over 80 dB. In addition to reducing test time by a factor of from two or three to one, the H.P. 3055 also insures that each board gets exactly the same test, thus improving board to board uniformity and field interchangeability.

We also use the two H.P. 3055's to do a functional test on completed products. Once again, the test system "talks" to test equipment but this time the test equipment is connected through the normal input and output connections of the completed unit.

In addition to the Zehntel and H.P. 3055 testers, we have a Fluke Trendar digital logic test set, a trace analyzer which is used to check out wiring harnesses and printed circuit motherboards for continuity, and an Automatic Radio frequency Tester Set (A.R.T.S.) which does functional testing at R.F. frequencies up to 1200 MHz. The A.R.T.S. system was designed and built by a sister division of Harris—P.R.D., and has so far been used to test sub-assemblies for our new FM 300 transmitter. Its capabilities will be expanded to include most of our FM product line including the MS 15 exciter.

We are currently in the process of obtaining approval for a new Hewlett Packard 3060 test system which will combine the best aspects of the Zehntel "bed-of-nails" and H.P. 3055 functional testing. The H.P. 3060 will verify components and perform digital and audio functional testing at one time. It will further reduce our test costs and improve the consistency and reliability of our audio and digital products.

IDEAS FOR PROGRESS



HERE IS MY IDEA!

THANK YOU!
For

- Submitting '78 "IDEAS" Since 1-February-'79
- Your Gratifying Response
- The Excellent Quality of Your "IDEAS"

AND REMEMBER —

- Keep The "IDEAS" Coming
- Watch The Bulletin Boards For Current "IDEA" Listing

Service Awards

—25 YEARS—

John Starr

15 YEARS

Clara Smoot

Marie Lange

Patsy Dean

10 YEARS

Loy Archer

Robert Beever

Ruth Jones

Gary Alexander

5 YEARS

Rollie Parker — Lewis Pifer, Jr. — Michael Power — Alonzo Fitzpatrick — Henry McElroy

1 YEAR

Sandra Cray — Barb Metcalf

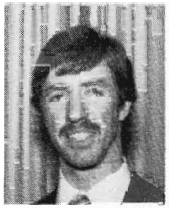
NEW EMPLOYEES

Daryl Buechting
Order Adm.

Becky Little
Personnel

Dick Kunz
Service Parts

Jean Blackburn
Service Parts



Tom Bentsen
Radio Engineering

EDUCATION AND TRAINING

CAPITOL RADIO ENGINEERING INSTITUTE HAS BEEN DISCONTINUED. We have received word CREI will not accept new students, however, those presently enrolled will be able to continue as usual to completion. National Radio Institute correspondence courses are still being offered by McGraw Hill.

TWO DEGREE PROGRAMS HAVE BEEN APPROVED BY THE JOHN WOOD COMMUNITY COLLEGE BOARD OF TRUSTEES. An Associates Degree Program in Business Management has been sent to the Illinois Community College Board and the Illinois Board of Higher Education for approval.

The bulk of the effort expended on developing an AAS in Electronic Technology has been due to the work of Rex Sandidge, Manager of Customer Training at Broadcast Products Division. John Wood Community College plans to pursue a contract with Harris for the delivery of technical course instruction and use the "Common Market" system for the support and general education courses. The program will be open to all citizens of the District and should serve students interested in general electronics as well as those seeking a career in broadcast electronics.

HARRIS CORPORATION Broadcast Products Division
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