NUMBER 6 JULY 1959

"Design unto others as you would they should design unto you" per Samuel Skolnik, PGRFI NY Seminar

Highlights of the New York Seminar: June 15, 1959:

New spec. 6181D should be out about August 1959.

New stabilization network curve and schematic. Can probably still use 6181B network, however.

Interference prediction is becoming of increasing importance.

Army estimates about 20,000 transmission elements in area of approximately 100 by 100 miles. Cannot predict all interference problems except by actual field experience.

Rapid search and measurement techniques badly needed.

Susceptibility to magnetic field now a major issue in equipment.

25,600 will go along with antenna at 5 feet instead of 1-foot. This spec. may eventually be consolidated with 6181B.

Attendance was - Unclassified 201, Classified 164.

A two-day Radio Frequency Interference Seminar, sponsored by the IEEE Professional Group of Radio Interference and the Air Research and Development Command of USAF, was held in New York on June 15 and 16. This seminar was attended by a total of over 250 radio interference engineers, together with representatives of Rome Air Development Center, Wright-Patterson Air Force Base, Bureau of Aeronautics, U.S. Navy, U.S. Army, Air Research and Development Command of the U.S. Air Force, and the Federal Communications Commission.

The first day was an unclassified session held at the Park Sheraton Hotel. The seminar Chairman, Mr. S. J. Bursaw, of the Filtron Company, arranged for a most informative program which included a morning session of interference predictions. The afternoon session, with Mr. E. W. Chapin of the Federal Communications Commission as Moderator, had a national panel of interference measurement experts on the stage. The interference measurement forum started off with a brief talk by several of the panel members who provided information on the latest interference measurement techniques. The seminar was then opened to the floor for questions from the audience. Members of the panel were: R. J. Farber of Haslett Research Corp., A. L. Albin of Filtron Company, L. B. Wilson of Sperry Gyroscope Company, R. B. Schults of Armour Research Foundation, A. T. Parker of Stoddart Aircraft Radio Company, M. T. Hargen of Empire Devices Products Corp., A. H. Sommenschin of Polarad Electronics Corp., C. S. Vasака of U.S. Naval Air Development Center, and S. Skolnik of Wright-Patterson Air Force Base.

The classified session of this seminar, held on June 16 at the Main Auditorium of the Albert Einstein College of Medicine and sponsored by the Air Research and Development Command of the U.S. Air Force, was the first classified seminar ever held on the subject of radio interference.

Mr. Leonard Milton, Executive Vice President of the Filtron Company and Vice Chairman of the Professional Group on Radio Frequency Interference, introduced the keynote speaker, Colonel C. H. Lewis, Director of Electronics, Headquarters, ARDC, Washington, D. C. Colonel Lewis, in a brilliant address on the subject of radio interference, brought out many of the problems of the Air Force due to radio interference and stressed that radio interference be considered in the initial stages of design of all new weapon system programs. He also stressed the requirement that throughout the entire program, continued top level radio interference efforts be continued so as to provide a weapon system that can operate without malfunction in the electronic environment for which it was designed. He also stressed the fact that the electromagnetic spectrum is a natural resource and must be conserved and utilized carefully, because this natural resource has its physical limitations. Once we use it up or contaminate it with interference signals of all kinds, then it has limited usefulness.

A paper entitled "Electromagnetic Interference Analysis and Control for Compatible Military Operation" was presented by Mr. Joseph Berliner of the Rome Air Development Center. Mr. A. L. Albin and Mr. Murray Cumar of the Filtron Company presented a paper entitled "Interference Analysis in the Ballistic Missile Early Warning System". Many new techniques and devices were shown on the screen and described in this paper which indicated that the state-of-the-art has been advanced.

A most comprehensive paper was presented by Mr. Leonard Milton, Executive Vice President of the Filtron Company, entitled "Methods of Signal Density Measurements". This paper, which was illustrated by over 50 colored photographs, described an electromagnetic radiation analysis that was taken of Thule Air Force Base and the Arctic vicinity by the Filtron Company last summer. Described were the methods of measurement. Shown were the radio interference vans, fully equipped for automatic measuring, and the data obtained and the calculations and analysis were presented.

Mr. E. R. Radford of the General Electric Company, Syracuse, presented an outstanding paper on "RF Power Density Evaluation and Measurements of AN/FPS-11 Radar System," Mr. Radford's paper was supplemented by over 40 photographs of the system. He described the methods, instrumentation, and results of the measurement program, together with an evaluation and analysis of the data.

Other outstanding papers were presented by Mr. W. B. Floyd and Mr. A. L. Fullerton, Jr., of Melpar, entitled "Interference Prediction Utilizing a Digital Computer", and Dr. H. A. Meyers of the Rand Corporation spoke on "Effects of Dense Radar Distributions in Receivers".

This classified symposium was attended by interference engineers and experts throughout the country, and was acknowledged by military interference experts as the most informative and technically up-to-date of all the interference symposia held so far.
INTERFERENCE AUTHORITIES MEET AT
RADIO INTERFERENCE SEMINAR

Left to Right:

S. J. BURRUANO - Seminar Chairman
LEN MILTON - Executive V.P., Filtron Co., Inc.
Col. C.H. LEWIS - Director of Electronics, ARDC, USAF
SAM SKOLNIK - WADC - Systems Interference Control
W. WEBB - WADC - Systems Interference Control
J. BERLINER - RADC - Systems Interference Control

Administrative Committee Meeting, March 23, 1959, Excerpts From:

Members present:

Other PGRFI or IRE members:
L. G. Cumming (Technical Secretary, IRE), R. Daniels, C. L. Engleman, F. Kugler, O. P. Schreiber and C. S. Vasaka.

Committee Reports:

Membership Committee: R. W. Fairweather, Chairman
The Committee has been advised that there are in excess of 400 paid-up members. (March 31, 1959 figures were as follows: 469 paid-up members, 100 unpaid members and 3 student members.)

Treasurer's Report: Lt. J. P. McNaul, Treasurer

Balance as of 28 February 1959 is $2,119.03

Elections: (To take office on July 1, 1959)
Chairman: J. P. McNaul
Vice-Chairman: S. J. Burrano
Secretary: A. R. Kall
Treasurer: R. W. Fairweather

Administrative Committee:
To serve one year: Burrano, McNaul, Kall, Pakala, Schenker
To serve two years: Criclow, Grobowski, Kant, Showers, Schwenk
To serve 3 years: Schreiber, Daniels, Fairweather, Milton, Thomas.

Note: Anyone interested in having a copy of the Minutes of the Meeting should write to IRE Headquarters, 1 East 79th St., New York 21, N. Y.

How a PGRFI Chapter was Formed:

A petition for a chapter of PGRFI was circulated in the Washington Section during January and February of 1959. It accumulated a total of 25 signatures, four of these were members of Fellow grade. On May 2nd it was submitted to the executive committee of the Washington Section for approval. It was approved immediately and forwarded to headquarters in New York for approval there.

In the meantime a mailing list of interested IRE members included PGRFI members and non-members of IRE was compiled from various sources. These people were invited to a meeting on March 5 to explain the interest and discuss future plans. H. E. Dinger gave an informal talk on the history of radio frequency interference work and Z. V. Grobowski, Jansky & Bailey, Inc., told of the organization and aims of PGRFI. Twenty-one attended this meeting and expressed keen interest in forming a local chapter as a meeting ground for those engaged in the interference field.

On April 3rd the secretary of the Washington Section was notified that the IRE Executive Committee had approved the petition for a Washington Chapter. In May the PGRFI group participated in a meeting with the Washington Chapter of PGVC to hear a paper on interference.

Planes were laid to hold a meeting of PGRFI early in June so that officers could be elected to plan and carry out a program of activities for the 1959-60 season. The chapter organizer appointed a nominating committee to select a slate of candidates. At the same time an interesting program was arranged for a luncheon meeting set for June 10th. C. W. Anderson of the Martin Co., Baltimore, was invited to speak on "Shortcomings of Interference Specifications." A panel of representatives from DOA agencies and the FCC responsible for interference specifications was selected. These representatives and their organizations were as follows:

Mr. Leonard Thomas, Navy BuShips
Mr. Guy D. Johnson, Army Signal Corps
Mr. Claude C. Pinson, Air Force
Mr. Verne Gunselley, Navy BuAir
Mr. Jules Deitz, FCC

This meeting drew an overflow attendance. Thirty-eight attended the luncheon and meeting and the discussion which lasted until 2:30 P.M. The discussion indicated a close interest in the problems concerned with compliance and measurement under the military specifications. In general the shortcoming of the specifications as outlined by Mr. Ander son have or will be taken care of in new issues of these specifications. It was pointed out that the problems of the airborne services are unique in the limitations of size and weight and the close proximity or "togetherness" of the equipment. There was agreement that the lack of manpower and lack of funds have had an arresting influence on the development of new techniques and the refinement of existing techniques to deal with radio frequency interference.

In the report of the nominating committee, the chapter organizer James S. Hill, Jansky & Bailey, Inc., was selected for the office of chairman; Donald R. J. White, ACF Industries, vice chairman; and Aaron R. Sullivan, Jr., Engleman & Co., secretary-treasurer. The were no nominations from the floor and these nominees were unanimously elected to office. The future program of the Washington Chapter will...
PGRF and its 42 members is now in their hands.
(EDITOR'S NOTE: A Fort Worth, Texas, Chapter was formed on December 1, 1958. Petitions are now being circulated for a Chapter on Long Island, New York, and in Philadelphia. More about these in our next issue.)

ITEMS OF INTEREST

PGRF Extends Invitation to PGRI for Florida Meeting:
PGRI membership has been invited to attend the PGVC Symposium which is scheduled for December 3-4 at St. Petersburg, Florida. Those wishing to attend should get in touch with J.H. Mitchell, Box 140, Tampa, Florida.

Low Level Signal Measurements:
The Right Angle, May 1959 issue, published by the Sound horn Company, Walham, Mass., contains an article by Morton H. Levin, Senior Research Engineer, titled: Low Level Signal Measurements with the Model 350-1500 Basic Chopper Preamplifier. The first paragraph states:

"The measurement of low level signals is often complicated by excessive noise (particularly 50 cycles) due to ground loops. Proper isolation of the input circuitry of an amplifier will allow microvolts of signal to be measured under these conditions. It will also allow the amplifier to be placed in the high side of a line for the purpose of measuring voltage drops across meter shunts. In addition, if the output circuitry is also isolated, ground loop problems with terminal equipment can also be avoided."

Bees Troubled by Short-Wave Signals:
The June 10, 1959 issue of the New York Times carried an article describing the troubles which a bee-fancier had with signals from overhead planes disturbing his bees. Excerpt from the article is as follows:

"With a short-wave radio apparatus, I could tune in on the signal from a passing plane to the ground. The bees would get nervous. The hive would start to hum. I would put a read screen over the hive and their nervousness would stop."

Low Noise Input Circuits:

Reduction and Prevention of UHF Interference:
Electronic Design, June 10, 1959, carries the following report:

"The origin and methods for reducing interference generated within UHF multichannel communication equipment such as the AN/ARC-27 are outlined in this report. The principal types of interference encountered were (1) intermodulation from the action of the nonlinearities in the early stages of the receiver and (2) spurious signal generation from the local spectrum-generator system. Nonlinearities considered were those found in the UHF amplifier tubes and first mixer tube. Title of report - Study Program for Investigation to Aid in Reduction and Prevention of UHF Interference, by Robert E. Meek, Howard L. McKinley and others, Georgia Inst. of Tech. Engineering Experiment Station, Atlanta, Nov. 56, 16pp, Microfilm $6.00, Photocopy $18.30. Order PB 135260 from Library of Congress, Washington 25, D.C."

Underground Radio Studied:
Electronic Design, June 10, 1959 carries a description of the Air Force's development of an underground communications system that would be almost invulnerable to enemy attack. "The advantages of the system? Protection from enemy attacks, negligible RFI, low vulnerability to countermeasures and low over-all cost."

Woman's Radio Voice Explodes Missile:
Anita Ehrman, Hearst Headline Service, wrote the following article which appeared in Hearst papers, June 12, 1959:

"Was it a woman's voice on a short wave radio frequency which inadvertently exploded an American missile in outer space?"

"This is the big mystery which puzzled U. S. scientists and was divulged by American delegates to a secret session of the UN outer space committee.

"According to UN informants, American delegates to the meeting attended by attending scientists by revealing to them that a human voice, on a short wave frequency, can have the same effect on the behavior of an outer space missile as that of its assigned radio signal."

"Aftet a U.S. missile had exploded prematurely after it was launched from its pad, an extensive investigation led to a taxi office in San Diego, Cal., which had short-wave communication operated on a frequency similar to that used for the missile.

"Experts concluded that the voice of a woman dispatcher in the office was so pitched as to be identical to the radio signal used to explode the missile in case of emergency and that, therefore, it was her instructions to a cab driver which caused the missile to explode."

"On the basis of another information, the UN scientists agreed in the secret session that urgent international attention should be given to protect radio frequencies used to transmit information between spacecraft and the earth."

Women, Birds - What Next?:
The UPI News Service distributed the following article for publication in May 15, 1959 papers:

"MOKINGBIRD'S FUN SPOILED BY ELECTRONICS WIZARD
Dallas, Tex. (UPI)-Roger Harlan has given a mockingbird the bird and is finally keeping his electronically-controlled garage doors closed.

Harlan, an electronics whiz, fixed his garage door so that it would open when he honked his automobile horn or whistled.

So finely was the device tuned that neighbors couldn't whistle the door open.

But Harlan began finding the door open when he came home. He asked his wife to keep an eye on the garage.

A few days later she reported a mockingbird came daily.

It perched on a basketball hoop above the door and had a delightful time opening and closing the door by matching Harlan's whistle.

Harlan put in another circuit that has to be tripped four times in rapid succession before it operates the door.

For several days, the bird tried in vain to match the timing, then gave up and flew away.

The Solion:
Naval Research Reviews, May 1959, carries the following information on solion:

"A remarkable new electrochemical device that bids to replace transistor in many electronic uses has been developed by the Naval Ordnance Laboratory. The device, called solion, is a product of a new technology developed by NOL called chemtronics, which involves the movement of ions in solution. The uniqueness of the solion is the way in which its electrical charge is carried - by ions in solution rather than by electronics, as in the vacuum tube and transistor.

"The most striking of the solion's characteristics is its extremely low power requirements, 100 to 1,000 times less than that for transistors. It is also highly sensitive to low-energy stimuli. Other features are inherent stability, long life, simplicity of operation, lightweight, and ease of manufacture.

"The Navy has devised several elemental types of solion units which can be combined for use as specialized transducers, very low frequency amplifiers, long period oscillators, and other devices."

Low-Frequency Magnetic Field Detector Based on Hall Effect:

Electronic Design News, June 1959, carries an article with the above title. The article states:

"A compact magnetic field detector for measuring low-frequency radio interference has been developed at the Armour Research Foundation of the Illinois Institute of Technology. The detector's pickup cell is of indium antimonide, a semiconductors. Using the Hall effect the"
is is responsive to the strength of the magnetic field rather than to 
time-rate-of-change as is a conventional loop pickup. Because of 
its small size and uniform frequency response, the detector will make 
possible more accurate field measurements. Developed for the U. S. 
Navy Bureau of Ships, the new detector will be useful in tracking down 
radio-frequency interference in the confined areas found in air-
craft and ship communications equipment. Other applications are being 
investigated."

This detector was described at the IRE National Convention, March 
1959, in a paper titled: Magnetic-Field Pickup for Low-Frequency 
Radio-Interference Measuring Sets, by Max Epstein and Richard B. 
Schula. Copies of this paper may be obtained by writing to the Armour 
Research Foundation.

Electromechanical Noise Generator:

Electrical Design News, June 1959, describes a Czechoslovak de-
velopment as follows:

"An electromechanical noise-generator uses the random connec-
tions between moving steel balls to generate low-frequency noise for 
system testing. The generator is simple to construct and has suffici-
ent output power (up to 1 watt) for most applications without the use of 
amplifiers.

"The generator consists of a stainless steel drum, about half 
full with 5/64 inch steel balls, on a rotating shaft, a current source 
identifies as a load resistor. The cylindrical portion of the drum is insulated 
by a shaft from plastic end-covers. As the drum rotates, the ran-
tom connections between the moving balls cause a varying resistance 
exist between the shaft and the outside surface of the drum. A cur-
rent passed through this varying resistance generates an voltage in the 
load resistor which has the random amplitude variations typical of 
system noise."

A schematic and picture of a unit are included.

New Process for Tin Plating Magnesium:

TIN NEWS, Washington, D. C., carries the followig news item:

"A new process for tin plating magnesium to permit solderability 
as been developed by Brooks & Perkins. This process uses the 
advantages of magnesium for electric and electronic parts. Copper 
plating followed by tin plating, followed by dipping in oil at 450 de-
crees F. fuses the tin and bridges over all microporosity in the copper. 
Solder alloys claim the soldering can be conventionally performed and that 
it is easier than on steel or copper"

Anybody who has had trouble with enclosures made of magnesium 
that have interference sources in them will find that the above will 
ve them many headaches.

High-Altitude Nuclear Explosions and Interference:

The following, from the May 4, 1959 issue of Washington Science 
ends, gives about the most detailed unclassified information avail-
able on the high-altitude nuclear explosions of August 1958.

High-Altitude Nuclear Explosions

Effects far transcending the much-publicized Argus series of nu-
clear explosions in space resulted from Teak and Orange, the code 
words for nuclear bombs detonated over Johnston Island in the Pacific 
August, 1958. In contrast to the Argus shots, Teak and Orange cau-
ted marked geomagnetic disturbances and extensive radio blackouts 
or thousands of square miles.

Johnston Island detonations took place near midnight August 1 and 
1958 at altitudes of roughly 12 to 25 miles. Explosive force, in the 
gate range, was many times greater than the Argus experiments.

Upper Atmosphere Effects - a new analysis by A. G. McNeil of the 
National Bureau of Standards indicates that the Teak and Orange explo-

dions ionized the upper atmosphere at a distance of more than one 
thousand miles to nearly daytime intensity. This resulted in electrical cur-
rent flows that produced marked disturbances in the earth's magnetic 
field lasting an hour or more. In contrast, the Argus experiments pro-
duced no magnetic effects other than a few minor oscillations lasting but 
16 seconds.

Radio Communications Effects - Teak and Orange explosions 
"blacked out" all radio communications circuits over an area of se-
veral thousand square miles. Circuits were out of operation for a per-
iod of hours and from Sydney, Australia - Wellington, New Zealand 
and Honolulu, Vancouver and San Francisco. Some circuits were im-
paired for a period of days. In contrast, the Argus experiments pro-
duced little or no communication difficulties, except perhaps in certain 
very low frequencies.

Magnetic Field Changes - Analysis by Bureau of Standards indic-
ates that magnetic field changes can be traced to primary and secondary 
gamma radiation from the shock wave test of up to a distance of 
roughly 1,300 miles. Effects registered several hundred miles further 
away are attributed to charged particles from the detonation traveling 
along the lines of the earth's magnetic field toward a magnetic conju-
gate point. It was in this region that the first artificial auroras were 
sighted.

Teak and Orange also provided an opportunity to confirm geomag-
netic theories which assume that the ionizing action of the sun's illumination 
produces electric currents which flow in the daytime but are virtually 
nonexistent at night. Magnetic effects at Honolulu and other points 
were reported to be nearly as large as if the lower layers of the iono-
sphere had been temporarily ionized to daytime intensity.

Stoddart Distributes Bulletin on Radiation Hazards:

The following Bulletin titled "Radiation Hazards in Radio Interfer-
ence Measurement" has been distributed by Stoddart:

1. Biological damage from exposure to intense RF radiation has been known for several years but only recently have quantitative limits 
been established.

2. A tri-service limit for exposure to RF radiation has been es-
pablished at 0.1 watts/cm² at any frequency. This is 195 volts/meter as-
suming linearly polarized plane waves. General Electric has proposed that a maximum safe limit of 0.01 watts/cm² (51 volts/meter) be used for 
continuous exposure and that .01 watts/cm² be an absolute maximum 
not to be exceeded except under emergency conditions.

3. It is possible that personnel operating Stoddart equipment will 
be exposed to power densities greater than .01 watts/cm². This will 
probably occur in locations where the RF field will not be linearly polar-
ized plane waves such as in the Frenzel Zone and in close proximity to 
magnets and klystrons.

4. It is suggested that before taking measurements near suspected 
or known strong radiation sources that reliable information on intensity 
be obtained.

Direct measurements of strong signal sources can be made with 
RF-FI equipment if the frequency is in the tuning range. Most RF-FI 
equipment does not have sufficient voltage range or shielding effectiveness to accurately measure to 194 volts/meter using standard antennas. In 
some situations, involving concentrated fields, the use of loop probes 
with their large antenna factors would enable approximate measurement. 
Limitations in RF-FI equipment shielding sometimes permits full scale 
meter indication when tuned to a very strong signal even with the an-
tenna disconnected. Needless to say, the operator should be concerned 
when this occurs.

The following chart provides approximate equipment range limits (full scale) in watts/meter with and without pickup devices.

The equipment would be standardized for use in the following chart in accordance with instructions on the charts supplied. Then the input attenuator should be placed in the maximum position. Continuous wave signals would be 
measured in FI function switch position. Pulsed signals are measured with PEAK function.

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Antenna</th>
<th>Approximate field strength volts/meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>NM-10A</td>
<td>Half meter rod</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>30” loop (90117-2)</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>6” loop (90114-2)</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Loop probe (90185-1)</td>
<td>1000µ</td>
</tr>
<tr>
<td></td>
<td>No antenna (or cable)</td>
<td>1000µ to 2000µ</td>
</tr>
<tr>
<td>NM-20B</td>
<td>41” rod (90291-2)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Loop antenna (90298-2)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Loop probe (90185-2)</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>No antenna (or cable)</td>
<td>20</td>
</tr>
</tbody>
</table>
We are indebted to Stoddart Aircraft Radio Company, Inc., for submitting the following letter from WADC to PGRFI Newsletter as a series of our answering questions which have come in from other members.

H. G. Carter
Acting Chief, Interference Control Section
Identification and Data Conversion Branch
Comm and Nav Laboratory
Directorate of Laboratories

We notify the corrections to MIL-I-26600:

Table I - Note 5 should not apply to the NM-50A in Category C.

The table of contents is to confirm the corrections to MIL-I-26600 that were discussed on 22 April 1959. These corrections will be included in a revision to be issued soon.

a. Figure 5 The curve should start at 105 db at .150 mc.
b. Figure 7 The limit should be 60 db above 1 microvolt/meter.
c. Figure 9 The limit for pulsed cw radiated should be 80 db.
d. Figure 12 The curve should be replaced by a curve defined by the following points. A tolerance of ±20 percent is applicable.

<table>
<thead>
<tr>
<th>dB</th>
<th>Counts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>.75</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>1.5</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>35</td>
</tr>
<tr>
<td>3</td>
<td>39.5</td>
</tr>
<tr>
<td>3</td>
<td>44</td>
</tr>
<tr>
<td>4</td>
<td>46</td>
</tr>
<tr>
<td>5</td>
<td>47</td>
</tr>
<tr>
<td>10</td>
<td>48.5</td>
</tr>
<tr>
<td>20</td>
<td>49</td>
</tr>
<tr>
<td>25</td>
<td>49</td>
</tr>
</tbody>
</table>

New Publication on Radio Signals:

The National Bureau of Standards announces a new publication on the theory of fading properties of a fluctuating signal imposed on a constant signal. The circular is a theoretical mathematical consideration of the varying strength of a radio signal consisting of two components - a constant signal and a fluctuating signal of the same frequency which has reached the receiver by a different path. Write to Government Printing Office, Circular 599, price 25c.

Radiation Hazards Discussed at GEEIA Headquarters:

Team leaders from each Ground Electronics Engineering Installation Agency recently met at Griffies Air Force Base, Rome, N. Y. for a series of courses on radio frequency radiation hazards.

Difference between AC and DC Capacitors:

Sangamo Electric Company, Springfield, Illinois, is running an advertisement on technical topics of a specific interest to engineers. The June 1, 1959 issue of Electronic News has an advertisement titled "What is the difference between AC and DC capacitors?"

Radio Noise in Bombing Navigation System:

At the National Aeronautical Electronics Conference, Dayton, Ohio a paper was presented by C. H. Grace, Senior Engineer, IBM, Military Products, Owego, N. Y., on the methods of dealing...
with radio noise problems in the design and construction of bombing navigation systems. The paper was published in the Conference Proceedings which are available from the Publications Committee, NAECON, P.O. Box 621, Far Hills Branch, Dayton 19, Ohio.

New Book on Electrical Safety:

ELECTRICAL SAFETY is a new book written by H. W. Swann, Senior Electrical Inspector for the British Home Office. The chapter on Static Electrification has information of value to those working in high ambient areas. It can be obtained from the Philosophical Library Inc., 15 East 40th St., New York 16, for $15.00.

Noise Sources in Radio Receivers:

Electronic Design, April 29, 1959, carries the following resume of a report available from the Department of Commerce:

"Considered in this study were problems of standard noise sources in a radio receiver, calibration of secondary standards, and their use in measuring receiver noise factors—problems which are associated with the use of the receiver in radio astronomy where noise is the intelligence measured. A review of figure of merit concepts and receiver measuring practices using gas-discharge noise sources led to formulae which are said to reduce computations to simple additions of excess noise temperature and attenuations. Hot-body noise sources were used as standards in development and calibration of gas-discharge noise sources. Studies of calibrations and source design problems disclosed sources of errors, useful design features, and special techniques valuable for receiver measurements and calibrations. Fundamentals in Noise Source Calibrations at Microwave Frequencies, J. E. See, Naval Research Laboratory, Jan. 1958, 24 pp. $0.75 PB 133367 from OTS, U.S. Department of Commerce, Washington 25, D.C."

Detection of Aircraft by Radars Subjected to Interference:

Electronic Design, June 24, 1959, page 84 carries a report under the title of "Radio Interference" as follows:

"The purpose of this memorandum is to examine some of the consequences of radio interference for the operator. By knowing what these consequences are one can be prepared to understand the penalties for not adequately solving interference problems. The principal conclusion to be reached is that the penalties of letting an operator cope with the results of radio interference are sometimes much greater than design engineers recognize. 'Detection of Aircraft by Radars Subjected to Radio Interference', John D. Coakley, Dunlap and Associates, Inc., Hamford, Conn., May 1957, 10 pp. Microfilm $2.40, Photocopy $3.30, Order PB 135 736 from Library of Congress, Washington 25, D.C."

Resistance Noise:

Electronics, June 26, 1959, page 60 carries a two-column description of a method developed by the National Bureau of Standards to evaluate the noise quality of fixed composition resistors. Two meters are used in the test set-up, one indicating average noise and one applied d-c, an ear in db for readily computing an index of noise quality and conversion gain.

Interference from the Ionosphere:

Electronic Industries, March 1959, carries an article by Martin J. Shapiro, Boeing Airplane Co., Lexington, Mass., under the above title. The sub-title states: Skyward facing directional antennas are key to ionospheric reflection interference. How to determine implications of subjecting to this source is this article's objective.

Noise Measurements up to 12,800 cycles:

A Germany publication, Frequen, July 1958 contains a 5 page article on noise measurements. The article classifies the various noise sources in the frequency spectrum up to 12,800 cycles. Level of noise measured at various frequencies.

Common Positive Electrolytic Capacitor:

The Syncro Corporation, Hicksville, Ohio, is publicizing a new common positive electrolytic capacitor which should be of interest to those engaged in interference problems. Catalogue No. CP 59 bulletin describes this capacitor.

A Glossary of RF Terms:

Camomade, published by Cannon Electric Co., in vol. XI, Summer 1959, carries a glossary of RF terms which are definitions of words basic to RF circuitry and are intended as a aid to the selector and use of radio-frequency circuit terminating devices.

MIL-I-6181B Testing Described:

Electromechanical Design, June 1959, as part of a series of articles on environmental testing, carries descriptive information on testing to MIL-I-6181B and puts into Table form the design guides suggested by that specification. (Too long to reprint in this Newsletter.)

Armour Conference:

Be sure to put down on your calendar the dates October 6, 7, 1959 which are those of the Armour Research Foundation Conference in Chicago. A list of papers will probably be available for our next Newsletter.

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