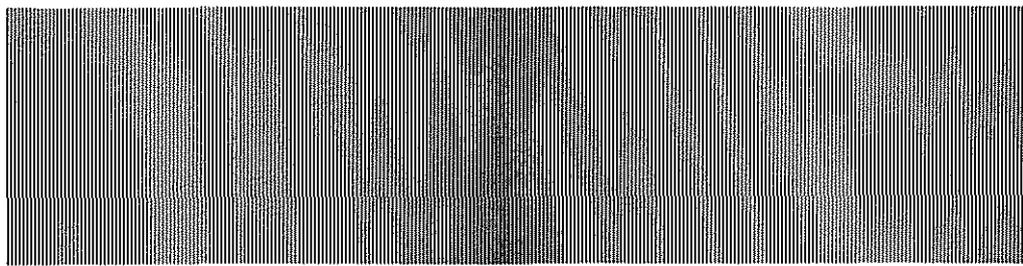


MICRO WAVE NEWS



Vol. I No. 4

A Monthly Report on Non-Ionizing Radiation

April 1981

INSIDE...

GOVERNMENT
Budgets & Briefs

p. 2

LETTERS

p. 3

LITIGATION

Directories of Plaintiff Attorneys
& Corporate Defendants

p. 6

PUBLICATIONS

p. 8

SHORT COURSES

p. 8

UPDATE

Around the Country,
Health Effects & VDTs

p. 3

YANNON APPEAL DECISION

Full Text

p. 5

NEXT MONTH

The report on the new ANSI standard and the Port Authority's data on radiation levels atop the World Trade Center, originally scheduled for this issue, will appear next month.

CORRECTIONS: March

• In the report on the World Trade Center, the proposed New York City population standard was mistakenly given as 50 mW/cm². The correct value is 50 μ W/cm².

• In Cox's UK survey of VDTs, no UV radiation was detected at wavelengths less than 336 nanometers—not above 336 nm as originally stated.

MICROWAVE DEATH AWARD UPHELD IN COMPENSATION COURT, NY TEL APPEALS AGAIN

In a precedent setting decision, the Workers' Compensation Board of New York has upheld a previous ruling that Samuel Yannon, a New York Telephone Company radioman, had died of overexposure to microwave radiation. On February 26, the three member Board panel found that "there was a direct causal relationship between decedent's exposure to microwave radiation during his employment and his subsequent disability all of which ultimately resulted in his death." New York Telephone immediately filed another appeal, taking the case to the Appellate Court of New York for review. (See p. 5 for complete text of decision.)

The case, brought by Yannon's widow, Nettie, in 1974, is the first to successfully establish chronic exposure microwave radiation as a cause of death. Yannon spent the last 15 of his 42 years with the phone company adjusting microwave relay equipment on the 87th floor of the Empire State Building.

As a result of the February decision, New York Telephone has paid more than \$29,000 in retroactive awards to Mrs. Yannon and will now pay her \$45 a week for life, or until she remarries. (Yannon has already received the award, regardless of the appeal, as dictated by a New York State law.) "I never gave up," Mrs. Yannon says of her six-year case against the phone company. "They

(continued p. 4)

Navy May Scrap Project ELF

The Secretary of the Navy has recommended abandoning its controversial, extremely low frequency (ELF) submarine communications system, according to a spokesman for Michigan Senator Carl Levin.

The one-way communication system, known as Project ELF and previously named Project Sanguine and Project Seafarer, is designed to send messages to submerged submarines, especially during a nuclear war. The signal, with a carrier frequency of 76 Hz, would be transmitted by a large underground antenna. The Navy has been trying to find a site for the antenna since the late 1960's, but has met repeated opposition in Wisconsin, Texas, and Michigan. Democratic Senator Levin has been a long-time opponent of the project, and has sought to stop its construction in his home state.

In the past, the Navy has said that the ELF system is essential to the national defense. Now, however, the Navy is no longer in favor of the project because the system would be vulnerable to nuclear attack, according to James Crutchfield, press aide to Senator Levin. Critics have charged that the system is too expensive and may not work. Questions about the biological and ecological effects of the ELF signals have also been raised.

The latest recommendation was made in a letter from Navy Secretary John Lehman and Under-Secretary Robert Murray to Defense Secretary Caspar

(continued p. 8)

GOVERNMENT

BUDGETS

Key agency officials have indicated that non-ionizing radiation programs will not be badly hurt by the proposed Reagan-Stockman budget cuts—though as some noted, the programs were not large to begin with. Through a series of interviews, *Microwave News* compiled the following agency-by-agency analysis:

Bureau of Radiological Health: For FY81, Reagan cut the total BRH budget by \$1 million to \$26 million, while staff years were cut to 545 from 556. In FY82, staff years were down to 528 from 556 and the budget to \$26.6 million from \$27.8 million. According to Neil Goldstein, associate director for management and systems, these cuts must now be allocated among the various programs (e.g.: ionizing and non-ionizing radiation, ultrasound, nuclear medicine, etc.). The FY82 planning process has begun, and will be completed over the summer. Goldstein believed the cuts could be met by postponing certain contracts and by retirement and attrition. One early indication of the FY81 cuts is that the publication office has had to delay printing certain reports until FY82.

Environmental Protection Agency: (1) Office of Research and Development: Daniel Cahill's Division of Experimental Biology reports that the 10% reduction in staff and 1.5% budget cut from the original Carter FY82 budget will cause essentially no impact on the non-ionizing radiation technical program at Research Triangle Park. The total FY81 budget is \$2.98 million (about \$2 million for Cahill's Division). This will now be reduced to \$2.94 million in FY82. Full time staff equivalents will go from 27.6 to 24.9. (2) Office of Radiation Programs: No positions were lost in the non-ionizing radiation group, although the office suffered a 35% staff cut, according to David Rosenbaum, deputy assistant administrator for radiation programs. (Non-ionizing radiation has about 6–10% of the staff.) While the Office's contract budget will be reduced to \$2 million in FY82 from \$8 million in FY81, this will not affect non-ionizing programs too much since they do not depend heavily on contracts, according to Dave Janes, chief of the electromagnetic radiation analysis branch. The Office's equipment budget will rise to \$1 million in FY82 from zero in FY81. In sum, as Janes put it: "It doesn't look too bad!"

Radiation Policy Council: The FY81 budget was cut from \$942,000 to an estimated \$600,000, and the FY82 budget of \$980,000 was eliminated altogether, according to Carl Gerber, RPC director. The budget of the Council, which was set up after the Libassi report was released in 1979, may still be restored, but the decision will lie with the many high-level officials still to be nominated and appointed. While the RPC has focused almost exclusively on ionizing radiation, if it does survive, the budget cuts will no doubt block it from extending its work to non-ionizing radiation.

National Institute for Occupational Safety and Health: Reagan cut the FY81 budget to \$64 million and 835 positions from Carter's proposed \$83 million and 928 positions. The FY82 budget was further reduced to \$59 million and 773 positions. These cuts have yet to be allocated among the various programs, and so their impact on the development of the MW/RF criteria document and Wordie Parr's Physical Agents Effects Branch in Cincinnati is still unknown. Institute priorities will not be set until a replacement for Anthony Robbins, who was fired by HHS Secretary Schweiker March 5, is in office.

Other Agencies: Spokesmen from the **National Bureau of Standards**, the **Office of Naval Research**, and the **Naval Medical R&D Command** could not say what the impact of the new budget would be. In each case, non-ionizing radiation is not a line item, and the outcome of the budget deliberations is some months away.

BRIEFS

The Interagency Regulatory Liaison Group (IRLG) published Volume II, Issue II of its *Regulatory Reporter*, dated December 1980, outlining EPA, FCC, FDA, NIOSH & OSHA's on-going and future activities on radiation control. . . . The Frequency Management Advisory Council (FMAC) held a meeting in Washington on February 20. On the agenda were the SPS program, long-range spectrum planning, and FCC rules and regulations (Part 15) on radiofrequency devices. . . . Recent contract awards: \$254,179 to Bendix Field Engineering of Columbia, MD, from the Naval Research Lab in Washington for "microwave oceanographic sensing system tasks," on January 30; \$646,700 to a joint venture group of A.D. Ring & Associates, Jules Cohen & Associates, and DataWorld, all of Washington, DC, from the FCC for "conversion of AM station directional antenna radiation patterns to standard patterns," on March 4; \$112,134 to UCLA from DOE, Nevada office, for "microwave experimental simulations"; and \$5,807,700 to Eaton Corp. in Farmingdale, NY, from NASA for the delivery of two microwave scanning beam landing system ground stations on February 13; \$140,784 to the Franklin Research Institute in Philadelphia from the Bureau of Mines for the "study of RF hazards at low and medium frequencies to blasting in underground mines," on February 18. . . . The Naval Air Development Center in Warminster, PA, is looking for a contractor to design, fabricate, and deliver test panels of radar absorbing materials. . . . Kirtland AFB in New Mexico is soliciting R&D proposals on "theoretical and analytical investigations and testing of equipment and facilities to effects of EMP phenomenon". . . . The building housing the non-ionizing radiation office of the Naval Medical R&D Command at the National Naval Medical Center in Bethesda was severely damaged by fire last February, forcing the office to move to another building in the compound. The new telephone number is (202) 295-0134.

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VDTs... A bill specifying occupational safety and health requirements for VDT operators has been introduced in the Maine State Legislature. Legislative Document No. 1049 includes requirements for workplace conditions, eye tests and rest periods.... *Health Hazards of VDTs? 2, "Some Solutions to the Common Problems"*, a second HUSAT conference at Loughborough University, England, was scheduled for March 19. Indirect health effects from VDT use were on the agenda this time.... Several presentations on VDTs are scheduled for the May 25-29 American Industrial Hygiene Conference in Portland, Oregon: J.S. Johnson on job stress in office work; R.H. Arndt on telephone operator reactions; and M.S. Gottlieb and co-workers, also on job stress—all from the University of Wisconsin; W. Loew from BRH on radiation emissions; and O. White, Jr. and E.J. O'Connell from Occupational and Environmental Health Analysts and H. Siegel and A. Blayer from the *New York Times* on a mass screening program. For conference information, contact Margaret Jordan, American Industrial Hygiene Association, 475 Wolf Ledges Parkway, Akron, OH 44311, (216) 762-7294.... Canada's Ministry of Labor has issued its report on radiation measurements from the VDTs used by Darlene Weiss, a government employee who is seeking workers' compensation for cataracts she believes are VDT related.... WNYC-FM radio in New York City will air a series of five special reports on VDTs April 6-10. Station reporters Tom Vitale and Sandy Tolan interviewed a broad range of experts and workers on the workplace impact and possible health effects of the terminals.... VDTs can cause high-level strain, according to a recent *New York Times* story. On March 24, Edwin McDowell reported that Jimmy Carter "endured several hours of anxiety" when he accidentally erased several manuscript pages from his word processor's memory. The former President is writing his memoirs on a Lanier "No Problem" unit.

Health Effects... A British neurologist believes the flashing display of an electronic space war game, "Astro Fighter", is of a "size, brightness and frequency that can cause seizures in sensitive individuals." In a letter to *Lancet*, the British medical journal (February 28, 1981), D.N. Rushton of the Department of Neurology at King's College Hospital in London wrote that a "multicolored stroboscopic effect, flashing at about 15 Hz," provoked attacks in a 17-year old youth after 20-30 minutes of playing the game.

Around the Country... The Scientific Advisory Panel for New York State's study on the health effects of high-voltage power lines scheduled its first public meeting for March 23 in Albany.... The National Park Service of the Department of Interior has prepared a draft environmental impact statement on the Appalachian Power Co. proposal to cross the Blue Ridge Parkway with a 765 kV electric transmission line. Copies available from the NPS, 75 Spring Street, SW, Atlanta, GA 30303, (404) 221-5835.... New York City's transit authority cancelled plans to spend more than \$500,000 designing a way to protect its ailing subway system from EMP radiation.

To the Editor: Your conclusion that the report of the BENER Task Force*, which I chaired, does not "seem to be a planning tool of the individual agencies involved in bioeffects research," [see *Microwave News*, January 1981, p. 3] is an editorial opinion, not a conclusion based upon careful investigation of the facts.

The process of writing the document was, in and of itself, a planning and coordinating exercise. Note, for instance, statements like the following (which refers to the assessment of occupational exposure):

BRH will take the lead role in identifying and/or developing appropriate instrumentation and survey techniques. NIOSH has the lead role in the collection of exposure data to support epidemiological studies. OSHA and BRH will continue to conduct field surveys as part of their compliance programs. (p. 21)

Such statements give a clear indication of the roles that the various agencies do or do not plan to assume.

Several new efforts, called for in the task force document, are now underway. For instance, on p. 33, the task force recommended "Future research will need to explore functional and morphologic consequences of NER exposure with an emphasis on the development of quantitative dose-response data." The award of a contract by EPA for conducting such a study was announced on p. 4 of your newsletter. Similarly, the report concluded,

Developing new or improved instruments for numerically characterizing electric and magnetic fields under near- and complex radiofrequency field conditions represents one of the most important needs in this area and will continue to receive major attention.

At the IMPI symposium, "The Washington Impact: How It Affects Microwave Users"*** Col. Winter announced, "The Navy is developing a personnel dosimeter which will measure and record important variables in an individual's RFR exposure." The National Bureau of Standards is participating in this effort.

I have also been told that the task force report is used by personnel within the federal agencies to demonstrate how their work fits into the larger, more cohesive, national program. In this way, scientists can demonstrate to budget examiners how their work supports the efforts of the larger group and meets the priorities agreed upon by representatives of 16 other federal agencies including the Office of Science and Technology Policy. A number of other uses were specified on p. 5 of the task force report.

In conclusion, I congratulate you on a fine start and thank you for the opportunity to "set the record straight!" Finally, I will admit that the report of the BENER Task Force could be an even more effective planning tool if it were to receive a broader distribution.

Howard E. Clark, Ph.D.
Scientific Adviser
Electromagnetic Radiation Hazards
Electromagnetic Fields Division
National Bureau of Standards
Washington, DC 20234

*"Nonionizing Electromagnetic Radiation Safety, A Program of Coordinated Federal Activities Related to Biological Effects of Nonionizing Electromagnetic Radiation (0-300 GHz)," NTIA-SP-80-7, available from Office of Public Information, National Telecommunications and Information Administration, 1800 G Street, NW, Washington, DC 20504.

**Proceedings available from the International Microwave Power Institute, 211 East 43rd Street, New York, NY 10017. \$40 for members, \$50 for nonmembers.

YANNON AWARD

(continued from p. 1)

wanted me to say there was no connection between Sam's illness and microwaves, but that just wasn't true."

Speaking from her home in Staten Island, New York, Mrs. Yannon says she expected the appeal victory after the initial favorable ruling by Administrative Law Judge Mary Egan on June 12, 1980. Egan found that Yannon had "sustained an occupational microwave radiation disease...resulting in brain changes, tissue destruction and an acceleration of arteriosclerosis, whose etiology was the exposure to the harmful effects of microwave radiation." Asked about the phone company's latest action she said, "It might take years, but the truth will prevail!"

Mr. Angelo Gucciardo, who represented Mrs. Yannon before the Workers' Compensation Board anticipated this appeal and is confident the ruling will be upheld again.

A spokesman for New York Telephone would not comment on the case, beyond confirming the appeal.

RCA Suit

In addition to her case against the phone company, Mrs. Yannon has also brought a third party suit against the RCA Corporation, the manufacturer of relay equipment Yannon used at the Empire State Building. The \$3.5 million suit, filed in 1976 in the New York State Supreme Court, Richmond County, charges RCA with breach of warranty and negligence. Mrs. Yannon's lawyer, David Pauly, who recommended workers' compensation specialist Gucciardo to her, says the February ruling will be extremely helpful in their action against RCA. This suit, now in pre-trial proceedings, involves a very different burden of proof, however, and may require years to complete.

Neither Donald Dietemann, the RCA attorney handling the case, nor Bower and Gardner, the law firm representing RCA, would comment on the case. However, Mrs. Yannon reports that RCA asked New York Telephone for transcripts of all the hearings in the compensation suit. When the phone company refused to cooperate, Gucciardo agreed to supply them. He also allowed *Microwave News* to review these records, which are otherwise accessible only to concerned parties at the Workers' Compensation Board offices at Two World Trade Center in New York City.

Working At the Empire State Building

During the hearings, Daniel Rieu, a colleague of Yannon's at the phone company, described the 87th floor facilities and the work schedule. (See p. 6 for list of hearing witnesses.) Yannon was there almost continuously from 1954 to 1969. "No one had ever worked up there as long as Sam Yannon," he said. Other employees, including Rieu, had only brief tours at the Empire State Building.

Radiomen spent part of each shift adjusting low power (mostly one watt) transmitters mounted in a separate room on the 87th floor. The number of transmitters operating at any one time varied, but Rieu guessed there were two or three on average, and occasionally as many as 15. Adjustment required removing the rear housing on a unit and tuning the Klystron

tube, which converts direct current into RF current. Sometimes a man had to stand in front of a transmitter, but according to Rieu, procedural instructions required cutting off the power before stepping in front of the transmitter dish and into the beam path.

From the hearing testimony, it is unclear exactly what equipment Yannon tuned over the years. RCA transmitters installed after his departure operating at 6 GHz and 11 GHz were similar to previous ones, according to phone company engineer Robert Vuono, but no detailed description of earlier equipment was entered into the record.

Conflicting Diagnoses

Nettie Yannon says her husband began to complain about headaches in 1964. He continued to work his usual long hours, but by 1968 he was persistently plagued by fatigue, eye trouble, sleep problems, forgetfulness, and clumsiness. By the time Dr. Alfredo Santillo of Staten Island examined Yannon in June 1970, he was physically and mentally disoriented. Yannon was unable to write his own name or to recognize his wife, he had very poor vision, and he had lost 30 of his usual 160 pounds. In his testimony before the Board, Santillo said he soon realized that this case "was in a field all by itself." Yannon, at 58, was too young to fit into the category of advanced cerebral arteriosclerosis, a diagnosis Santillo had initially reached.

The phone company terminated Yannon for medical reasons in the same month as Santillo's first examination. Thereafter, his condition rapidly deteriorated. By his death in 1974, Yannon, aged 62, weighed under 70 pounds and had lost almost all sight, memory, speech, and motor coordination. Santillo remained Yannon's doctor until 1973 and finally diagnosed his condition as "chronic brain syndrome with psychotic overtones due to biological brain changes resulting from prolonged exposure to short wave radiation."

New York Telephone has maintained throughout the compensation case the Yannon suffered from retinitis pigmentosa, or pigmentary degeneration of the retina, and pre-senile dementia, probably Alzheimer's disease—a common cause of senility. Neither ailment is known to be associated with microwave radiation. To support this claim, Professor Sol Michaelson and Dr. Robert Herndon from the University of Rochester School of Medicine, and Dr. Paul Tyler, director of the Armed Forces Radiobiology Research Institute, testified for the phone company. "I can find no evidence to suggest that [Yannon's] illness was unusual or mysterious," Herndon said, "and nothing to suggest it was due to microwave irradiation."

Testifying for Mrs. Yannon, Dr. Milton Zaret, a well-known New York ophthalmologist and controversial expert on microwave radiation, supported Santillo's diagnosis. He had no doubt after examining the medical records that Yannon suffered from "an extreme case of microwave radiation sickness, and that it resulted ultimately in his death."

The only neurologist to perform tests on Yannon did not make a definitive diagnosis. In 1969 Dr. Martin Geller, then at St. Vincent's Hospital in Staten Island, examined Yannon. According to Gucciardo, Geller's report suggested looking in-

to Yannon's exposure to microwave radiation for a possible link to his illness. Geller was not called to testify and the phone company's lawyer did not contest Geller's report.

No Exposure Data

The lack of data on the radiation levels at the Empire State Building during Yannon's tenure there, as well as the difficulty of diagnosing his condition, presented problems for both sides of this case. No measurements were taken on the 87th floor prior to Yannon's death. Finally, in 1975 at the request of Mrs. Yannon, Bell Labs helped the Occupational Safety and Health Administration take measurements. But by this time all the equipment Yannon worked on had been replaced. It is now impossible to determine how much radiation Yannon received.

Although the Yannon decision is not the first workmen's compensation award for microwave radiation health damage, Yannon's is the first death attributed to microwaves by a Compensation Board.

Text of Appeal Decision

The self-insured employer seeks review of the Workers' Compensation Law Judge (Referee) decision filed 6/18/80 insofar as findings are made that the decedent sustained a causally related occupational microwave radiation disease within the meaning of Paragraph 30, Section 3, Subdivision 2 of the Workers' Compensation Law, notice and causally related death, and from the awards made pursuant to such findings. The self-insured contends that the decedent suffered from Alzheimer's Disease which was not demonstrated to be occupationally induced and that based on the evidence, the decision in both cases should be rescinded in toto and the claims dismissed.

Case #2308 was indexed on behalf of claimant for exposure to radiation with a subsequent claim filed by widow (case #3602) for death in connection with radiation exposure. Dr. Santillo testified that he treated claimant from 6/24/70 to 2/20/73 with an original diagnosis of premature senility that upon final diagnosis he felt was caused by prolonged exposure to microwaves. Dr. Santillo stated his diagnosis was based on his own questioning and research in medical literature which showed that a hazard exists when working near microwaves, and debilitation can occur. Dr. Santillo stated at time he first saw claimant, he had lost 30 lbs; was unable to care for himself and had almost complete removal of memory and said while there was no test he could carry on the claimant, he felt condition was perhaps very strongly related to microwaves. Dr. Shaner, testifying from N.Y. Telephone Company medical records for the claimant, stated that original diagnosis received from claimant's treating physician was left homonymous hemianopsia with possible disease of the right eye, with a final diagnosis of bilateral encephalopathy (dissection of the brain) degenerative with no evidence whatsoever of any job relationship. Dr. Shaner stated her research showed any exposure severe enough to cause internal damage due to excessive heat would cause so much heat to surface of the skin that person would not stay in the area but admitted her medical experiences were limited to the N.Y. Telephone Company and she was not conversant with any foreign research on the subject of microwave exposure.

D. Rieu, Radioman, testified he worked same job as claimant from May 1955 tuning microwave equipment varying from 2/3 to over 15 microwave lengths at one time. Rieu testified that one would have to go up to unit and open a door to tune the unit inside or walk between a glass area and the dish to fix a feedhorn. Rieu stated that claimant worked an exceptionally long number of years compared to other craftsman in the

group; that claimant also worked a good bit of overtime during that time; that he noticed a deterioration of sight, hearing and coordination in claimant and said that Radiomen are issued a sheet cautioning them about the hazards of the equipment. Dr. Santillo on retestimony stated nothing he heard of Mr. Rieu's testimony causes him to change his opinion.

R. Vuono, Sr. Staff Engineer, testified that he had over 24 years experience with microwave irradiation; that he is experienced with physical set up of the facility and that there is a difference between emission and exposure; pointed out the range of emission (power output) from radar (high) to microwave radio used in T.V. pick-up (low); stated that the equipment in use would not produce a power output greater than 1.5 watts and that studies in the U.S. show there is no cumulative effect of even 10 milliwatts and continuous exposure.

C. Hinson, Service Foreman, testified that he worked with claimant as a co-worker; agreed that claimant would be close to a machine about 2-3 times a day, 20 minutes each time; that claimant would be in same room as transmitters about one-half of each day and that for each signal received a transmitter was used. Hinson testified that shields were removed when they were being adjusted; that he did not believe levels that were transmitted could damage one's body but admitted he would not stand in front of one.

O. Tamuz, NYS Sr. Radiological Health Specialist, testified his testing found radiation levels within Federal guidelines permitted (10 milliwatts per square centimeter permitted; 9 milliwatts per square centimeter found), but admitted some of the information his report was based on was given by Phone Company personnel and that machines were not working except for his testing purpose.

Dr. Zaret testified that in his field of ophthalmology, he performed studies for various departments of the U.S. Government on the effects of exposure of microwaves on the ape, primates, etc. Dr. Zaret testified that the standard accepted by the Federal Government had become void in 1971 and revalidated without further study in 1973; that Soviet standard is around 1,000 times less than U.S. standard and that studies involving microwaves and apes showed some monkeys were being killed at lower intensity than anticipated. Dr. Zaret stated, in answer to a hypothetical question incorporating claimant's work history, activities and autopsy findings, that claimant suffered an extreme case of microwave or radiowave sickness which resulted ultimately in his death. Dr. Zaret stated direct action is one of the two ways microwave radiation can produce the kind of brain damage claimant exhibited and said there are Soviet and American studies documenting this. Dr. Zaret, on retestimony, stated that while claimant's physician's diagnoses were similar in some degree to other conditions, he agreed with Dr. Geller's findings of degenerative disease attributed in some form to microwave exposure.

Dr. Michaelson testified that he is a Doctor of Veterinary Medicine and a Professor of Radiation, Biology and Biophysics; that based on his research with the biologic effect of microwave exposure that there is no reason to believe there is a cause/effect relationship between the injury and microwave frequency exposure. Dr. Michaelson stated safety factor standards were based on some information related to functional change in animals and said that his opinion was based on his review of those records and depositions made available to him. Dr. Michaelson testified he disagreed with the findings of the Bureau of Radiological Health which analyzed and criticized his findings because of lack of adequate evidence to substantiate the conclusions.

Dr. Hendon testified he reviewed claimant's records and concluded that he suffered from retinitis pigmentosa and pre-senile dementia, probably Alzheimer's Disease. Dr. Hendon stated that based on his reading and research work, he finds no material indicating a relationship between microwave exposure and Alzheimer's Disease or cataract

(continued p. 6)

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formation or causal relationship between claimant's work and his disability or death. Dr. Hendon stated he was associated at same school as Dr. Michaelson; was suggested by him as a consultant in the case and had discussed it with him prior to testifying and admitted he had no personal exposure to people who were alleging exposure to or damage from microwaves.

Dr. Tyler testified that he is qualified in radiobiology as a specialist; that he reviewed all records made available to him and agreed with autopsy report which gave immediate cause of death as bilateral lower, low bronchial pneumonia with secondary findings of pre-senile dementia, retinitis pigmentosa and generalized arteriosclerosis. Dr. Tyler stated that retinitis pigmentosa is found with some degenerative diseases of the brain but he found no medical literature associating it with pre-senile dementia; that he finds no relationship between claimant's microwave exposure and diseases found and that he disagrees with Dr. Zaret's diagnosis. Dr. Tyler stated that his clinical impression was claimant had Alzheimer's Disease although it was possible there were two other types of brain disease similar to the above. Dr. Tyler admitted that there was a book in print critical of himself and accusing him of conducting a coverup for Defense Department in relation to microwave exposure and that Dr. Geller, a neurologist, did not diagnosis Alzheimer's Disease in the claimant. Dr. Michaelson, on retestimony, identified studies done by an ad hoc review committee on which he sat which found part of Dr. Zaret's experiments as adequate and part not well done. Dr. Michaelson admitted that he had been contacted by claimant's widow and had recommended that claimant's attending physician would be in best position to give an answer as to causal relationship.

Upon review the Board Panel finds based on the entire record and particularly the testimony of D. Rieu and Drs. Santillo and Zaret, that there was a direct causal relationship between decedent's exposure to microwave radiation during his employment and his subsequent disability all of which ultimately resulted in his death. The Board Panel further finds that the decedent sustained an occupational microwave radiation disease within the meaning of Section 3, Subdivision 2, Paragraph 30 of the Workers' Compensation Law and that his death was causally related to his occupation.

Accordingly, the Workers' Compensation Law Judge (Referee) decision filed 6/18/80 is AFFIRMED and the case is continued.

All concur.

Francis J. Griffin	Daniel J. Higgins	Ferdinand Tremiti
Workers' Compensation Board		
New York City		February 26, 1981

**Witnesses at the Yannon
Workers' Compensation Board Hearings**
(In order of appearance.)

Dr. Alfredo Santillo, Staten Island, New York
 Dr. Alice Shaner, Medical Specialist, New York Telephone Company
 Daniel Rieu, Radioman, New York Telephone Company
 Robert Vuono, Senior Staff Engineer, New York Telephone Company
 Charles Hinson, Service Foreman, New York Telephone Company
 Olgerts Tamuzs, Bureau of Radiological Health, White Plains
 Regional Office, New York State Department of Health
 Dr. Milton Zaret, Scarsdale, New York
 Dr. Sol Michaelson, Professor of Radiation Biology and Biophysics,
 University of Rochester
 Dr. Robert Herndon, Center for Brain Research, University of
 Rochester
 Dr. Paul Tyler, Director of Armed Forces Radiobiology Research
 Institute

Collecting information on current and past cases involving microwave radiation is difficult: most defendant companies and plaintiff attorneys refuse to comment on on-going litigation, and many cases are settled out of court, leaving few records. Filed complaints are a matter of public record and many plaintiffs and defendants were willing to confirm official details.

A spokeswoman for Western Electric, which has three cases pending, issued a statement to *Microwave News*, stating in part: "We will defend ourselves, and deny the equipment was hazardous and that the equipment caused the injury." She would not comment, however, on the Imoto case, which was settled out of court, saying that this was company policy for cases where more than one company was involved.

The litigation survey presented below was collected during the last couple of months. While we have no reason to doubt its accuracy, because of the secrecy surrounding these matters, we advise the interested reader to check with the attorneys and corporations listed in the appended directories.

Air Traffic Controllers: Young has settled four claims of air traffic controllers with job-related cataracts under the Federal Employees' Compensation Act, winning substantial awards. Eight more cases are pending, seven cataract injuries and one non-operable eye disability. Young's clients are from all over the country.

Ovens: Two women, who claim to have been burned by a microwave oven while working in a restaurant in Spokane, Washington, are suing Litton for \$3 million. They are represented by Deglow and Belli.

Moscow: A number of suits have been filed against the US government over the irradiation of the US embassy in Moscow. Two attorneys believed to be handling some of these cases are Hills (see *Microwave News*, January 1981) and Peery.

Radar: Suits over microwave-related injuries are the most common type of litigation. Among the plaintiffs were and are:

- Robert Barbee, a former radar repairman with cataracts, represented by Leavitt, filed a complaint against Bendix, GE, Raytheon, and RCA in federal court in Nevada in November 1979, and against Western Electric in March 1980. Barbee is seeking \$500,000 in damages and \$5 million in punitive damages.
- Stanley Burgis, a former M-33 radar technician represented by Stopford, alleges microwave-induced cataracts and retina damage in a products' liability claim against Western Electric filed in Pennsylvania state court in summer 1980 (later moved to federal court in eastern Pennsylvania). According to Stopford, Burgis is now blind.
- Robert Engell, a TACAN radar repairman from 1964 to 1975, represented by Moller and Shafner, alleges microwave-induced pancreatic cancer and endocrine disorders. The \$4.5 million suit against General Dynamics, ITT, Raytheon, Rockwell, Teledyne, and Varian was filed in federal court in Hartford in 1977 and is still in discovery. A jury trial is due to begin soon.
- William Farnham, represented by Ellison, alleges microwave-induced cataracts sustained aboard USAF aircraft in a complaint against Hughes, Northrop, and Rockwell filed in state court in San Francisco in October 1978.

- Leo Foley, represented by Ellison, alleges radar induced cataracts while aboard an EC-121 constellation in a complaint against GE, Hazeltine, Hughes, Lockheed, Philco-Ford, Raytheon and Telerad-Lionel filed in state court in Sacramento in April 1979.
- Tobias Imoto, a former radar maintenance man represented by Davidson, settled a case out of court against GE, Raytheon, and Western Electric, alleging cataracts as well as skin and brain disorders.
- Roy Josey, represented by Sweeney, developed bilateral posterior subcapsular cataracts after working on radar development at Elgin AFB for Bendix. The AF settled out of court for \$171,000 in 1971, with Bendix making a substantial contribution. Josey also won a workers' compensation claim for about \$20,000. Five years later Josey, aged 38, died of a brain tumor.
- Ronald Karras, a former radar repairman represented by Phillips, suffers from multiple, serious injuries. While there are reports that this case was just settled out of court, repeated calls to Phillips for confirmation were not returned.
- Joseph Kerch, a pilot for Air America from June 1965 to June 1974, has a case represented by Shafner before a Department of Labor administrative law judge alleging a radiant energy cataract as well as hearing loss. Briefs were filed in December 1980.
- Glenn Lough, represented by Ellison, alleges radar-induced cataracts in a complaint filed against ITT, Raytheon, Sperry Rand, and Western Electric in state court in San Francisco in late 1978.

- Don Turner, represented by Ellison, alleges cataracts sustained aboard US aircraft in a complaint against Hughes, Lockheed, McDonnell Douglas, and Northrop filed in state court in San Francisco in May 1978. The case has since been moved to Los Angeles.

In addition, Spears has just abandoned a case against RCA and Western Electric, alleging radar-induced ocular damage. Leonard and Lyons are both considering bringing legal action. Leonard represents a former B-47 crew chief, who believes he was badly injured by an electronic countermeasure jamming device. Lyons's client is a former EC-121 radar operator, who has assorted serious injuries.

Lyons is interested in forming a bar group for the attorneys representing the victims of radar and microwave injuries.

CORPORATE DEFENDANTS IN MICROWAVE CASES

Air America	Lockheed
Bendix	McDonnell Douglas Aircraft
Ford Motor (Philco Division)	Northrop Aviation
General Dynamics	RCA
General Electric	Raytheon
Hazeltine	Rockwell International
Hughes Aircraft	Sperry Rand
ITT (ITT Electron Tube Division)	Teledyne
Lionel (Telerad Division)	Varian Associates
Litton	Western Electric

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O'Brien, Shafner, Bartinik,
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Michael Spears
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251 Magnolia Street
Spartanburg, SC 29301
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Philadelphia, PA 19106
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John E. Sweeney
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Plaza Level
Los Angeles, CA 90012
(213) 620-0401

Robert G. Young
Webb, Young, Daniel & Murphy
1901 Peachtree Center, Cain Tower
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Atlanta, GA 30303
(404) 522-8841

BOOKS

A.J. Baden Fuller, *Microwaves, An Introduction to Microwave Theory and Techniques*, second edition (Elmsford, NY: Pergamon), 1979, 326 pp., \$30 hardbound, \$13 paperback. *This revised and expanded edition now includes up-to-date information on semiconductor oscillations and amplifiers as well as a chapter on stripline devices.*

Charles Panati and Michael Hudson, *The Silent Intruder, Surviving the Radiation Age* (Boston, MA: Houghton Mifflin), 1981, 208 pp., \$9.95. *Using a question and answer format, Panati, a radiation health physicist and former Newsweek science editor, and Hudson, a Newsweek staffer, discuss the various types of radiation and their health effects. A chapter on RF and microwaves and one on ELF review some of the work of Adey, Becker, Frey, Marha, Schwan, and Zaret in language easily accessible to a general audience.*

REPORTS AND PERIODICALS

BRH

Carl I. Vassar, Jr., et al., *Report of State and Local Radiological Health Programs*, Fiscal Year 1979, Bureau of Radiological Health, October 1980, No. FDA 81-8034.

ELF

Roland J. Starkey, Jr., "The Renaissance in Submarine Communications, Part III, The ELF Odyssey 1958-1979," *Military Electronics/Countermeasures*, January 1981, p. 26.

Ovens

"Microwave Ovens," *Consumer Reports*, March 1981, p. 128. *A feature report including brand name ratings.*

Power Lines

John A. Molino, et al., *Psychoacoustic Evaluation of Transmission Line Audible Noise: Building Attenuation Effects, Methodology Comparison, and Field Study Feasibility*, January 1, 1979 to December 31, 1979, Volume 1, Department of Energy, No. DOE/RA/29323-1.

Stephen Shoenholz, Joel Ray, "High Power Lines," *Bulletin of the Atomic Scientists*, February 1981, p. 59. *An exchange about an earlier article by Ray.*

RF Heaters

Guide for Submission of Information on Industrial Radiofrequency Dielectric Heater and Sealer Equipment Pursuant to 21 CFR 1002.10 and 1002.12, Bureau of Radiological Health, November 1980, FDA 81-8137.

Report on the Survey of Radiofrequency Heaters, Environmental Health Directorate, Health Protection Branch, Ottawa, 1980, 80-EHD-47. Available from the Information Direc-

• May 5-8, *Modern Antenna Measurements*, Holiday Inn of Bethesda, MD. Contact: Technology Service Corporation, 8555 16th Street, Silver Spring, MD 20910, (301) 565-2870 or 2950 31st Street, Santa Monica, CA 90405, (213) 450-9755. Fee: \$525.

• May 27-29, *Microwave Technology and Applications for Industry*, Central New Jersey, Center for Professional Advancement, in conjunction with the International Microwave Power Institute. Contact: Mrs. Edith Webb, P.O. Box 964, The Center for Professional Advancement, East Brunswick, NJ 08816, (201) 249-1400. Fee: \$390 for two days, \$560 for three days.

• June 9, *Measurements for Microwave Safety and Compliance*, Royal York Hotel, Toronto (immediately prior to the International Microwave Power Institute annual meeting). Contact: IMPI, 211 East 43rd Street, New York, NY 10017, (212) 867-4659. Fee: \$125 IMPI members, \$150 non-members.

• July 6-8, *Diagnostic and Therapeutic Applications of Microwave Technology*, George Washington University. Contact: Continuing Engineering Education Program at GWU, Washington, DC 20052, (202) 676-6106 or (800) 424-9773 toll free. Fee: \$595.

• August 17-21, *Ultrasound, Microwaves, Laser, and Ultraviolet: Biophysical and Biological Basis, Applications, and Hazards in Medicine and Industry*, Massachusetts Institute of Technology. Contact: Office of the Summer Session, Room E19-356, MIT, Cambridge, MA 02139. Fee: \$725.

torate, Minister of National Health and Welfare, Brooke Claxton Building, Ottawa, K1A 0K9.

VDTs

Colin Mackay, *Human Factors Aspects of Visual Display Unit Operation*, Health and Safety Executive, London (UK): Her Majesty's Stationery Office, 1980.

Navy May Scrap Project ELF

(continued from p. 1)

Weinberger. Crutchfield said that the decision was based on the advice of Chief of Naval Operations Thomas Hayward. A spokesman for the Navy would only say that the Secretary of Defense had sent his recommendation to the Secretary of Defense, and that the final decision would be made by the President.

In a 1979 report, the General Accounting Office recommended that the project be scrapped. And in its FY81 Department of Defense authorization last August, Congress required the President to report back on the Administration's plans for the deployment of Project ELF or its cancellation by April 1, 1981.

More than \$100 million have been spent on the ELF project, and another \$500 million would be needed to complete it.