

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of)

Guidelines for Evaluating the)
Environmental Effects of)
Radiofrequency Radiation)

ET Docket No. 93-62

COMMENTS OF THE NATIONAL ASSOCIATION OF BROADCASTERS

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EXECUTIVE SUMMARY

The National Association of Broadcasters ("NAB") supports the Commission's proposal to revise its RF radiation human exposure regulatory scheme to specify the "ANSI/IEEE C95.1-1992" RF radiation exposure standard as the basis for its new guidelines. However, in revising its rules, NAB urges the FCC to adopt implementation procedures and to interpret the revised standard -- adopted by the American National Standards Institute and developed by the Institute of Electrical and Electronics Engineers -- in a fashion that will minimize burdens on broadcasters (and other regulatees) yet still adhere to the standard's provisions.

As is the case under the Commission's existing RF radiation exposure regulatory system, we urge the FCC to continue the "three-prong" approach whereby stations generally will be able to avoid making actual measurements to assess and certify compliance. Instead, the majority of broadcasters should be able to determine their compliance through the use of charts and graphs. The Commission also should allow for a reasonable transition period, and transition procedures, for implementing its revised rules.

Key to the present FCC regulatory scheme is FCC OST Bulletin No. 65. This document provides detailed guidance for broadcasters' and other regulatees' task of assessing compliance. Similar to the process that surrounded the preparation of this Bulletin in 1985, we urge the Commission's staff to work with various organizations and individuals expert in the science,

engineering and regulatory aspects of RF exposure in developing a revised edition of that document.

In adopting a revised RF radiation regulatory scheme, NAB urges the Commission to adopt a rational interpretation of the "controlled" and "uncontrolled" environment provisions of the revised ANSI/IEEE standard and to incorporate reasonable and practical approaches to the regulation of human exposure to "contact" and "induced" currents. We also believe that the Commission responsibly can continue a program of "categorically excluding" various communications operations from the FCC's RF regulatory program.

Also, and due to the difficulties -- caused by the intervention of nonfederal authorities -- that many broadcasters and other FCC regulatees are having in siting and employing FCC-authorized facilities, we believe that now is the time for the Commission to confront squarely the need to adopt a lawful and effective policy of federal preemption. Absent such a policy, the frustration now experienced by many existing communications companies will be eclipsed by the effects of nonfederal opposition to the introduction of new communications technologies such as High Definition Television and the Personal Communications Service. Indeed, the very implementation of such new technologies may be threatened unless the Commission takes near-term action.

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COMMENTS OF THE NATIONAL ASSOCIATION OF BROADCASTERS

I. INTRODUCTION AND SUMMARY.

In these comments, the National Association of Broadcasters ("NAB")¹ offers its support and recommendations for the Federal Communications Commission's proposal² to revise the FCC's guidelines³ for evaluating the environmental effects of human exposure to "nonionizing electromagnetic energy," or "RF radiation."⁴ The instant FCC proceeding is similar to the one

¹NAB is a nonprofit, incorporated association of radio and television stations and networks which serves and represents the American broadcast industry.

²Notice of Proposed Rule Making ("Notice") in ET Docket No. 93-62, 8 FCC Rcd 2849 (1993).

³See Section 1.1307 (b) of the Commission's Rules, 47 C.F.R. § 1.1307 (b). Also key to the Commission's current regulatory scheme for controlling RF radiation exposure is FCC OST Bulletin No. 65, prepared by Dr. Robert F. Cleveland, FCC Office of Engineering and Technology (previously the FCC Office of Science and Technology). OST Bulletin No. 65 also contains the work product of other government representatives and was influenced by the comments and suggestions of various individuals and organizations acknowledged in the Bulletin.

⁴Initially, the FCC specified August 13, 1993, and September 13, 1993, as the deadlines for the filing of comments and reply
(continued...)

completed in 1985⁵ wherein the FCC adopted its current RF energy exposure guidelines -- which currently are based on the twelve year-old American National Standards Institute ("ANSI") RF radiation protection guide, ANSI C95.1-1982.⁶

Here the FCC proposes to adopt ANSI's revised RF exposure standard, developed by the IEEE, denominated as: ANSI/IEEE C95.1-1992.⁷ Similar to the previous FCC RF radiation rulemaking process, the Commission again is endeavoring to carry out its responsibility under the National Environmental Policy Act of 1969 ("NEPA").⁸ Due to the passage of time, and the continued study on the effects of RF radiation exposure, the

⁴(...continued)
 comments, respectively. However, in response to a series of requests for extension of such deadlines, each based on the need for additional time to conduct analyses, measurements and other assessments, the FCC has set today as the deadline for comments and February 24, 1994, as the deadline for the filing of reply comments. See, Order Extending Time for Comments and Reply Comments, DA 94-34, released January 10, 1994. This Order, adopted in response to an extension request filed by CBS Inc., also discusses the extension requests granted earlier in response, first, to an NAB request and, second, to a request submitted jointly by CBS and Capital Cities/ABC, Inc.

⁵See Report and Order in Gen. Docket No. 79-144, 100 FCC 2d 543 (1985); recons. granted in part, Memorandum Opinion and Order, 50 Fed. Reg. 38653, 58 RR 2d ("P & F") 1128 (1985).

⁶"American National Standard Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz," ANSI, 1430 Broadway, New York, N.Y. 10018, Copyright, 1982, Institute of Electrical and Electronics Engineers, Inc. ("IEEE"), 345 East 47th Street, New York, N.Y. 10017.

⁷"ANSI/IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz" ANSI/IEEE C95.1-1992.

⁸42 U.S.C. § 4321, et seq.

revised ANSI standard reflects much more current thinking, theory and scientific findings than the body of knowledge upon which the 1982 ANSI standard was based.

As discussed more fully, below, NAB supports FCC use of the revised ANSI standard in its program of regulating human exposure to nonionizing energy. That is, NAB finds the revised ANSI/IEEE standard to be far preferable to other possible substitutes, discussed in the Notice, for ANSI/IEEE C95.1-1982. On the other hand, and as also will be discussed at length below, the Commission has a responsibility to "interpret" the revised ANSI/IEEE standard in a fashion that will meet the Commission's obligations under NEPA yet not impose undue and unjustified burdens on broadcast licensees or other communications operations to be regulated under this revised regime.⁹ Of special focus in this regard is the ANSI/IEEE C95.1-1992 treatment of "induced current" and "contact current" exposures. For the reasons stated below, on these matters in particular the Commission must adopt a regulatory approach which is faithful to the standard but recognizes -- and gives deference to -- several practical problems with the assessment of compliance. The achievement of such a regulatory balance is particularly important in complicated situations involving "joint use" sites where many emitters are located in close proximity to each other.

⁹In this regard, NAB is participating today in the comments being submitted by the Electromagnetic Energy Policy Alliance ("EEPA" or "Alliance"). These Alliance comments address the Commission's Notice from the perspectives of various communications companies and technologies.

Consistent with the approach taken in 1985, the Commission should adopt a "three-pronged" approach for broadcasters and others needing to certify compliance. Under this approach, the FCC would adopt, and incorporate in its revised Technical Bulletin, charts and graphs that could be employed to determine easily, in the majority of situations, compliance with the FCC's RF exposure guidelines. Where compliance, using these charts and graphs, cannot readily be confirmed, then the Commission should allow its regulatees to employ mathematical formulas to determine compliance. Only when compliance cannot be determined by using the above-mentioned techniques would a broadcaster or other party subject to the revised rules be required to conduct actual measurements. We urge that this three-pronged approach, as well as other aspects of determining compliance, be addressed once again in a Technical Bulletin.

As will be discussed in more detail below, NAB commissioned Jules Cohen, P.E., to develop a draft for such a Technical Bulletin. This task was completed and Mr. Cohen's "Proposed Revision of OST Bulletin No. 65" is provided as Appendix I to these comments.

This proposed revision to the Technical Bulletin, as characterized elsewhere in these comments, is offered as a comprehensive and responsible "starting point" for the forthcoming government/industry discussions which ultimately, we trust, will result in a revised Technical Bulletin (or perhaps a

"family" of technical bulletins) to be used by broadcasters and others to determine compliance with revised FCC RF exposure guidelines.¹⁰

These comments also address, as elicited by the Notice, the matters of: (1) "categorical exclusion" of various communications facilities from the scope of the Commission's revised RF regulatory scheme; (2) the use of gloves and other protective clothing in assuring compliance; and (3) how the concepts of "controlled" and "uncontrolled" environments would apply to various communications facilities and operations. This controlled/uncontrolled discussion also is related to NAB's recommendation that the FCC base its revised exposure guidelines on the revised ANSI standard, rather than on other proposed standards which do not incorporate such a regulatory dichotomy.

Finally, NAB urges the Commission to give initial consideration to how the agency must address the growing problem of non-federal authorities' adoption of RF exposure standards which differ from -- and often are more stringent than -- those employed by the FCC. Indeed, the entire federal/non-federal relationship must be addressed very soon, not only to ensure responsible construction and use of FCC-licensed facilities but also to ensure the successful, efficient and nationwide "rollout" of new technologies, such as high definition television ("HDTV"),

¹⁰The Jules Cohen paper, dated October 12, 1993, includes updated charts prepared January 10, 1994.

terrestrial digital audio broadcasting ("DAB") and the Personal Communications Service ("PCS").

II. CONTINUING NAB'S LONG-TERM INVOLVEMENT IN RF EXPOSURE AND REGULATORY MATTERS, WE SUPPORT THE COMMISSION'S PROPOSALS TO EMPLOY THE REVISED ANSI/IEEE STANDARD IN ITS OWN REGULATORY PROGRAM.

A. NAB Has Particular Expertise in These Matters Due to Active Involvement on RF Radiation Issues for Many Years.

NAB's active involvement in FCC RF radiation exposure issues began with our participation in the Commission's proceedings in Gen. Docket No. 79-144.¹¹ Through various pleadings¹² NAB offered its views -- little different than those which are being set forth in today's comments -- on the need for rational, scientifically-based standard for RF energy human exposure and for, as discussed again in these comments, federal preemption of varying non-federal RF energy standards and related restrictions imposed by states, counties and municipalities.

To better address and understand the growing issues of nonionizing energy, including its biological effects, the regulation of exposure and the public perception of these issues, in 1984 NAB became a founding member of the Electromagnetic Energy Policy Alliance. The Alliance has been extraordinarily

¹¹See Notice of Inquiry in Gen. Docket No. 79-144, 72 FCC 2d 482 (1979); see also Notice of Proposed Rule Making in Gen. Docket No. 79-144, 89 FCC 2d 214 (1982).

¹²See, e.g., NAB Comments in Gen. Docket No. 79-144, filed August 16, 1982; see also Reply Comments in Gen. Docket No. 79-144, filed October 18, 1982.

active in covering all aspects of these matters. Each year the Alliance has conducted symposia and courses addressing RF radiation-related topics. It has conducted and directed research on RF radiation exposure, testified at Congressional hearings and has commissioned, among other projects, a biostatistical review of the many scientific studies on RF exposure.¹³ The Alliance also has issued "fact sheets" and other written materials that broadcasters and other communications companies have been able to use to explain the science and realities of RF energy exposure to various lay groups, including city councils, zoning boards and citizens groups often holding unfounded fears over RF exposure.

NAB, along with Alliance representatives and others, participated in the preparation of the OST Bulletin No. 65, which has been a central component of the Commission's current regulatory scheme for regulating RF exposure from FCC-licensed facilities. Indeed, and as will be discussed more fully below, we trust that NAB, the Alliance, individual Alliance members and other interested industry parties will be working with the FCC in the revisions to the Bulletin.

In order to provide broadcasters with information on how to comply with the Commission's current RF radiation regulations, NAB published, and sent to all our broadcast station members, a Broadcaster's Guide to FCC RF Radiation Regulation

¹³Final Report: Biostatistical Review of Selected Literature on the Biological Effects of Radiofrequency Electromagnetic (RFEM) Radiation, Dr. M. Selwyn, Dr. Jennifer Anderson, Dr. Constantine Maletskos, Electromagnetic Energy Policy Alliance (July 1986).

Compliance. This Guide, first published in 1985, has been updated and reissued several times to include new information on the FCC's regulatory approach to human exposure to RF energy.¹⁴ Each edition of the Guide has included a complete copy of OST Bulletin No. 65. NAB also has manufactured -- and made available for purchase by broadcasters -- RF radiation warning signs.

In addition, NAB's annual spring Conventions and fall Radio conferences frequently have included sessions -- some for technical personnel; some for station management -- specifically addressing RF radiation exposure issues. Moreover, and in coordination with NAB, many broadcasters attend the conferences, symposia and other informative sessions presented by the Alliance.

Due to this active participation in all phases of RF radiation's science, regulation, education and public policy, NAB believes it is particularly capable of providing the Commission with useful and expert guidance as the agency works toward updating its own regulations and guidance for controlling human exposure to RF energy from Commission regulatees.

¹⁴These updates have become necessary to provide broadcasters with information concerning, inter alia, categorical exclusions (Second Report and Order in Gen. Docket No. 88-469, 3 FCC Rcd 5922 (1990) and the RF radiation regulatory treatment of FM translator stations (Report and Order in MM Docket No. 88-140, 5 FCC Rcd 7212 (1990)).

B. NAB Recommends That the Revised ANSI/IEEE Standard Be Adopted As the Foundation for New FCC RF Radiation Exposure Guidelines.

In the Notice, the Commission has proposed to revise its environmental rules to incorporate the revised, 1992 ANSI standard. For reasons set forth here and in a subsequent section of these comments, NAB supports FCC employment of the ANSI/IEEE C95.1-1992 in the FCC's RF human exposure regulatory guidance program.

Already,¹⁵ the Commission's record in this proceeding reflects substantial support for the FCC's proposal to "adopt" ANSI/IEEE C95.1-1992 as the agency updates its own environmental guidelines. Such support is widespread and reflects the views of a wide variety of parties and perspectives.¹⁶ It is expected that, after the filing of all comments and reply comments, the record of this proceeding will reflect even stronger support for the Commission's proposed adoption of this standard.

¹⁵Because not all interested parties apparently were aware of the several extensions of the comment deadline, several sets of initial comments were filed "prematurely" and are now part of the record of this rule making.

¹⁶Among the parties supporting FCC use of ANSI/IEEE C95.1-1992 are: Raytheon Company, the Utilities Telecommunications Council, Hatfield & Dawson Consulting Engineers, Inc., the Committee on Man and Radiation of the IEEE, Cohen, Dippell and Everist, P.C., the National Association of Business and Educational Radio, Inc., the Arizona Department of Public Safety, Matsushita Communications Industrial Corporation of America (MCC/Panasonic) and BellSouth.

NAB recognizes, however, that the record currently reflects some opposition to FCC adoption of ANSI/IEEE C95.1-1992.¹⁷ In these comments NAB addresses some of the matters upon which these parties have based their opposition. In reply comments NAB will provide a more detailed response to these parties -- and to the parties already filing in support of the Commission's adoption of ANSI/IEEE C95.1-1992 -- in the context of the other initial comments that are being filed today.

III. AN UPDATED "TECHNICAL BULLETIN," DEVELOPED THROUGH GOVERNMENT/INDUSTRY EFFORTS, IS KEY TO ANY REVISED FCC RF RADIATION REGULATORY PROGRAM.

One of the hallmarks of the current FCC regulatory program for controlling human exposure to RF radiation is FCC OST Bulletin No. 65,¹⁸ which provides broadcasters and many other FCC licensees with detailed guidance on how to achieve and certify compliance with the FCC RF exposure guidelines. As noted above, that Bulletin was produced as a cooperative effort among government personnel and industry representatives. NAB trusts that the process which led to the creation of the Bulletin will

¹⁷Among those parties offering such a view was the U.S. Environmental Protection Agency (USEPA). The USEPA comments suggest that the FCC adopt a "mix" of the provisions of the standard adopted by the National Council on Radiation Protection and Measurements ("NCRP"), titled "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," NCRP Report No. 86, issued April 2, 1986, and ANSI/IEEE C95.1-1992. Other parties have supported the Commission's use of at least portions of ANSI/IEEE C95.1-1992, recommending certain substantive or interpretive departures from that standard.

¹⁸See note 3, supra.

be repeated as part of the Commission's adoption of revised RF exposure guidance.

In the Notice the Commission acknowledges that proposed adoption of ANSI/IEEE C95.1-1992 "will raise a number of issues and implementation concerns."¹⁹ NAB shares that view -- there indeed are several matters of implementation and interpretation that deserve thorough study, careful decisionmaking and clear guidance to FCC regulatees. These matters, we believe, are best addressed through the kind of process which resulted in OST Bulletin No. 65. Through such a process, various interested parties and responsible government officials will be able to address -- in a collegial and expert manner -- the practical questions concerning the application of the ANSI/IEEE C95.1-1992 standard to the variety of communications operations that would not be "categorically" or otherwise excluded from the Commission's revised regulatory program.²⁰

While a single Bulletin was employed to implement and provide guidance concerning the current Commission regulatory program, it may be that the Commission would prefer, this time, to issue a "family" of technical bulletins -- where each bulletin would address specific communications systems (e.g. broadcasters, amateur radio operators, cellular radio companies, etc.). In

¹⁹Notice, supra note 2.

²⁰As explained below, NAB believes that, in addition to those devices benefiting from the "low power" exclusions found in the revised ANSI/IEEE guideline, a variety of communications operations still may be "categorically excluded" from the scope of the Commission's RF regulatory scheme.

this fashion, persons responsible for assuring their or their companies' compliance with RF radiation human exposure regulation would be given focussed, specific guidance. But, regardless of the Commission's choice of issuing a single bulletin or a series of bulletins, NAB and other broadcast representatives will be prepared to provide thorough assistance to the Commission and to the process. Additionally, and consistent with the role NAB played following the issuance of OST Bulletin No. 65, NAB plans to take the lead in affording the broadcast industry clear, thorough and important information on how to determine and then certify compliance with the revised FCC RF radiation regulatory program.

In order to provide initial assistance in the process of revising the Bulletin, NAB issued a "Request for Proposals" in June, 1993. This "RFP" sought proposals for: (1) the analysis of the Commission's Notice and the ANSI/IEEE C95.1-1992 guideline; and (2) the preparation of text plus new and modified charts and graphs that could be employed in the broadcast and broadcast-related portions of the Bulletin's revision.

NAB selected Jules Cohen, P.E., to conduct these tasks. His work has been a key element in the preparation of these comments. Also, and as NAB pledged in a "Request for Extension of Time" filed July 9, 1993²¹, we are appending to these comments

²¹In this pleading NAB explained the process it had undertaken, through the issuance of the Request for Proposals, and indicated that it would submit, in the record of this proceeding, the results of the effort to update the approach taken in OST Bulletin No. 65.

the complete "Proposed Revision to OST Bulletin No. 65," prepared by Mr. Cohen. These materials, provided as Appendix I to these comments, should be viewed as a "starting point" for the collegial, deliberative process that will lead to the preparation of a final technical bulletin (or a family of bulletins) that will guide FCC licensees under the revised FCC RF regulatory program.

Using the revised bulletin(s), we expect that broadcasters and many others subject to the FCC's regulatory scheme will be able to enjoy the same kind of "three-pronged" system of analysis whereby the burdens of compliance with the existing FCC RF radiation regulatory program have been reduced in the majority of circumstances. In the future, we trust that the vast majority of stations again will be able to avoid the need to conduct actual measurements and, instead, will continue to assess and then certify compliance through the use of easy-to-read charts, graphs and mathematical formulae.

IV. THE COMMISSION CAN USE THE DEFINITIONS IN THE REVISED ANSI/IEEE STANDARD TO DEVELOP A RATIONAL AND PRACTICAL SYSTEM FOR DETERMINING WHICH AREAS SHOULD BE CONSIDERED "CONTROLLED" OR "UNCONTROLLED."

One of the most important aspects of the new ANSI/IEEE C95.1-1992 RF exposure standard is the two-tier specification of maximum permissible exposure ("MPE") environments. One is designated for the "controlled environment" and a more restrictive one is designated for the "uncontrolled environment."

ANSI/IEEE C95.1-1992 defines "controlled" and "uncontrolled" environments as follows:

Controlled environments are locations where there is exposure that may be incurred by persons aware of the potential for exposure as a concomitant of employment, by other cognizant persons, or as the incidental result of transient passage through areas where analysis shows the exposure levels may be above those shown in Table 2 [permissible exposure levels for uncontrolled environments] but do not exceed those in Table 1 [permissible exposure levels for controlled environments], and where the induced currents may exceed the values in Table 2, Part B, but do not exceed the values in Table 1, Part B.²²

Uncontrolled environments are locations where there is the exposure of individuals who have no knowledge or control of their exposure. The exposures may occur in living quarters or workplaces where there are no expectations that the exposure levels may exceed those shown in Table 2 and where the induced currents do not exceed those in Table 2, Part B. Transitory exposures are treated in 4.1.1.²³

In considering the implementation of the new standard, it is significant to note that ANSI/IEEE designated a more stringent uncontrolled environment standard, even though it was the opinion of the committee that: "no reliable scientific data exist indicating that: "Certain subgroups of the population are more at risk [from RF exposure] than others"²⁴ Indeed ANSI/IEEE C95.1-1992 states that, based on the existing scientific evidence, the limits embodied in the controlled environment are "safe for all."²⁵

²²ANSI/IEEE C95.1-1992, supra note 2, at § 9.

²³Id. page 12. Section 4.1.1 of the standard provides the maximum permissible exposures for controlled environments.

²⁴See ANSI/IEEE C95.1-1992, supra note 7, Standard, §6.

²⁵Id.

Notwithstanding the above, the revised ANSI/IEEE standard does specify an extra margin of safety for environments where persons are not aware of the potential of RF exposure in certain circumstances. Thus, NAB does not agree with the Commission's assertion that it is best to take a conservative approach and apply the conditions of the uncontrolled environment wherever possible.²⁶ Rather, the conditions of controlled or uncontrolled environments should be applied as warranted for each communications operation.

A key element in the assessment of any communications operation is the concept of "transient passage" or "transient exposure." Though not explicitly stated, the ANSI/IEEE standard implicitly defines transient exposure as:

... exposure of the general public as well as occupational personnel, e.g., in passing through areas such as an observation platform near a transmitting tower where analyses show the exposure may be above that shown in Table 3 [uncontrolled exposure levels] but is below that in Table 1 [controlled environment exposure levels].²⁷

Put more simply, it is safe for people to be exposed on a short duration, non-recurring basis to RF radiation in excess of the uncontrolled environment levels, so long as the controlled environment standard is not exceeded.

The concept of transient exposure accommodates some of the practical realities of regulating RF exposure. In cases where a person might be walking or driving by a transmission site, or standing in an observation area near a broadcast facility, it would

²⁶Notice, supra note 2, ¶ 13.

²⁷ANSI/IEEE C95.1-1992, supra note 7, Standard § 6.

be unreasonable for the facilities at that site to reduce power in order to bring the energy levels down to the uncontrolled standard. Rather, these situations should be evaluated with respect to the controlled environment exposure levels, because the passage is of a transient nature.

Further, because the ANSI/IEEE standard states that the controlled environment exposure levels are "safe for all," application of the concept of transient exposure in the evaluation of broadcast and broadcast auxiliary facilities is wholly appropriate and involves no public risk.

Within the broadcast environment, there are four operational areas for evaluation to which the above definitions can be applied: the transmitter facility, studio facility, business offices and remote pickup facilities. NAB believes that only the business offices clearly would be considered to be an uncontrolled environment. Workers in the business offices generally would be unaware of their potential for exposure. All other operational areas should be considered predominantly "controlled" environments.

Production personnel and operating and maintenance technicians working at the studio and transmitting facilities are persons aware of the potential for exposure as a concomitant of employment. Those work areas, where access is confined to station employees whose duties require their occasional or consistent presence at the transmitting location, are controlled environments. Further, station employees can be trained and informed of their potential for exposure and stations can enact work policies which

will ensure that the studio and transmitting facilities are considered controlled environments.

If the transmitter facilities are shared by multiple users, some of whom may not be broadcasters, the posting of warning signs (as is done currently) and the institution of agreed work practices preserve the controlled environment categorization. Rooftop locations used by multiple services should be considered as controlled environments so long as access to the rooftop is restricted by the control of door keys, coded locks or guards. If access is not restricted to particular persons, but the presence of the people can be expected to be limited in duration, then the conditions of transient passage apply and these areas also can be considered controlled environments. In a situation where a portion of a rooftop could be reserved for antenna facilities, but other portions are used for sunbathing or other prolonged activities, the portion of the roof where transmitting antennas are located would be fenced off, thus rendering it a controlled environment but the remainder of the roof would be an uncontrolled environment.

NAB does not agree with the Commission's position that transmitters and other facilities located in residential areas should be subject to the guideline of uncontrolled environments. So long as access to the transmitting facilities is restricted and work policies are in place, the area inside the restricting boundary is a controlled environment. Further, if public access to the area outside, but near, the restricting boundary is expected to be of a

transient nature, such as a hiking path or highway, then it too should be subject to the provisions of the controlled environment.

Clearly, uncontrolled environment criteria would apply to areas outside of restricted boundaries, where access is available and people may be expected to remain for extended periods of time, such as camp grounds, homes, playgrounds and school yards. Also, private and public property not under the control of the transmitter operator, other than locations where only transitory passage is expected, would be considered as uncontrolled environments (except in situations so remote that access by the public is possible only by an extraordinary effort, such as a mountain top accessible only by helicopter or by way of a road barred to the public).

Equipment used for remote broadcast pickups may involve the use of hand-held voice transceivers; vehicle-mounted voice/data transmitters; portable UHF transmitters; fixed and mobile low-power microwave transmitters; and portable satellite uplinks. NAB believes that all such facilities, while being used in connection with station employment or used while in the performance of station related business should be subject to the guidelines of the controlled environment. Further, NAB believes that it is principally the responsibility of the equipment manufacturer to recommend usage guidelines to ensure these products' compliance with ANSI/IEEE C95.1-1992 exposure levels.

Unlike general public use of cellular or land mobile transceivers, where awareness of radiation exposure may not be present, broadcast employees would be "aware of the potential for

exposure as a concomitant of employment." Except for the user, uncontrolled environment criteria would apply to the vicinity of the hand-held device when transmitting. However, hand-held transmitters involve negligible radiation exposure threat to nearby persons.²⁸

In general, uncontrolled environment criteria would apply to transmitters with antennas mounted on the exterior of the vehicle. Vehicle-mounted transmitters may use greater power than hand-held units for aural or data transmissions to the studio. Commission rules allow transmitter power up to 100 watts.²⁹ At that power level, using a commonly employed, roof mounted quarter-wave stub antenna, the maximum permitted uncontrolled environmental exposure at 450 MHz (0.30 mW/cm², averaged over 30 minutes) is limited to within approximately 7 feet. If the vehicle is so located that only transient passage of individuals is to be expected, controlled environment criteria would apply. In that event, the exposure limit for the 100-watt, 450-MHz unit (averaged over six minutes) becomes 1.5 mW/cm² and the radius for exposure shrinks to 3 feet.

Both the extremely low-power microwave transmitting systems used at sporting events such as football games and golf tournaments,

²⁸Section 74.431(e) of the Commission's Rules limits the power of such transmitters to 2.5 watts. At 450 MHz, the maximum permitted exposure for the uncontrolled environment is 0.30 milliwatt per square centimeter (mW/cm²). A person would have to be within 33 centimeters (13 inches) to exceed this exposure level.

²⁹Section 74.461(b) states, in part: "The authorized transmitter power for a remote pickup broadcast station shall be limited to that necessary for satisfactory service and, in any event, shall not be greater than 100 watts"

and the higher power systems providing the link to the studio, must be categorized as working in uncontrolled environments. However, the narrow antenna beams employed, and the need to have unobstructed paths, result in little public exposure.

Similar considerations apply to mobile satellite uplinks. The environment is uncontrolled except for the operators, who are properly classified as working in a controlled environment. Satellite uplinks, directed toward satellites in the geosynchronous orbit more than 20,000 miles above the equator, have their narrow beams shooting well above the heads of people nearby. Additionally, since they can tolerate no obstructions in the path, they cannot be directed toward buildings.

Broadcasters' compliance with the applicability of the differential between controlled and uncontrolled environments can be provided by the adoption of guidance provided to all personnel charged with the operation of transmitting devices. Depending on station practices with respect to transmitted power, controlled and uncontrolled areas can be defined using easily applied numerical calculations or by resort to graphical depictions of the relationship of radiated power, frequency and distance to maximum permissible exposure contours.

V. CONTINUATION OF EXISTING CATEGORICAL EXCLUSIONS FOR FACILITIES LICENSED UNDER PART 74 IS JUSTIFIED UNDER ANSI/IEEE C95.1-1992.

NAB believes that, in general, those facilities authorized under Part 74 -- Remote pickup, Low Power Auxiliary, Aural Auxiliary, and Television Broadcast Auxiliary -- continue to qualify for the

categorical exclusions under paragraph (b) of §1.1307, as described below.

Remote pickup and low power auxiliary facilities, authorized under subpart D of Part 74, include channels in the Mid Frequency (MF), High Frequency (HF), Very High Frequency (VHF) and Ultra High Frequency (UHF) ranges. However, due to congestion and interference conditions, in general, only the VHF and UHF channels are in widespread use. Base stations in the VHF or UHF bands merit categorical exclusion if the user complies with requirements for operation that would be set forth by the manufacturer. For example, a typical roof or tower mounted base station, where vertical polarization is employed, has negligible radiation downward. So long as the antenna's lowest element is at least three meters above the building roof top, exposure cannot exceed either the controlled or uncontrolled maximum permitted exposure level³⁰.

Hand-held devices employed for remote pickup purposes by broadcast personnel are classified properly as being used in a controlled environment. Written instructions provided to all personnel using the devices would provide the "awareness" expected for users, and would include instructions about proper use, including positioning the unit so that the radiator is not within 2.5

³⁰With the entire permitted 100 watts delivered to a single dipole antenna operating at 150 MHz, with the center of radiation 3.5 meters above the ground, the maximum field strength (measured at 2 meters above the ground) is 22 volts per meter (V/m), equivalent to a power density of 0.13 mW/cm². As you move away from the base of the antenna supporting structure, the power density will decline to approximately 0.01 mW/cm² at 10 meters.