Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band	)	WT Docket No. 08-166
	)	
Public Interest Spectrum Coalition, Petition for Rulemaking Regarding Low Power Auxiliary Stations, Including Wireless Microphones, and the Digital Television Transition	)	WT Docket No. 08-167
	)	
Amendment of Parts 15, 74 and 90 of the Commission's Rules Regarding Low Power Auxiliary Stations, Including Wireless Microphones	)	ET Docket No. 10-24

To: The Commission

SUPPLEMENTAL COMMENTS
OF THE NUCLEAR ENERGY INSTITUTE
AND UTILITIES TELECOM COUNCIL

The Nuclear Energy Institute ("NEI") and the Utilities Telecom Council ("UTC") on behalf of the operators of the nation's 104 nuclear power plants (collectively the "Nuclear Regulatory Commission ("NRC") Reactor Licensees," or "Reactor Licensees"), hereby submit supplemental comments in response to the Commission's Public Notice[1] inviting further comment on the Report and Order and Further Notice of Proposed Rulemaking (the "R&O and

[1] The Wireless Telecommunications Bureau and the Office of Engineering and Technology Seek to Update and Refresh Record in the Wireless Microphones Proceeding, WT Docket Nos. 08-166, 08-167, ET Docket No. 10-24, Public Notice, 27 FCC Rcd 12067 (Public Notice). By Order, DA 12-1296, released November 30, 2012, the deadline for filing comments on the Public Notice was extended to January 25, 2013.

Further Notice") in the above-reference proceeding.[2] Among other things, the R&O and Further Notice seeks comment on (i) whether it would serve the public interest to permit a limited expansion of eligibility under Part 74, Subpart H of the Rules to include Reactor Licensees, and, if so, how such expansion should be managed and defined; (ii) whether the nuclear plants should be treated as a "special case," such that these facilities should be entitled to obtain licenses under Part 90 to operate certain low power auxiliary equipment inside the plants, and under Part 74 for outdoor use within each plant's security perimeter, and if so, for what purposes, and (iii) how to ensure the most efficient and effective long-term arrangement for the use of wireless microphones, leveraging technological advances.

I. Background.

For nearly a decade, through Special Temporary Authorizations, Experimental Licenses, and waivers, the FCC has allowed the Reactor Licensees to employ Telex wireless headset equipment for critical communications within their plants. This equipment has operated at exceedingly low power (not exceeding 100 mW) on frequencies in the broadcast television band. Due to practical necessity, the FCC allowed the Reactor Licensees to operate the equipment indoors without meeting the distance separation which would be required for other broadcast auxiliary and wireless microphone use. This operation was initially authorized after the Reactor Licensees reached a consensus plan with the television broadcast industry associations and more recently pursuant to a Commission waiver of Part 15, granted in October 2010.[3]

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[2] Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band, WT Docket No. 08-166, Public Interest Spectrum Coalition, Petition for Rulemaking Regarding Low Power Auxiliary Stations, Including Wireless Microphones, and the Digital Television Transition, WT Docket No. 08-167, Amendment of Parts 15, 74 and 90 of the Commission's Rules Regarding Low Power Auxiliary Stations, Including Wireless Microphones, ET Docket No. 10-24, Report and Order and Further Notice of Proposed Rulemaking, 25 FCC Rcd 643 (2010).

[3] Request to Modify Condition on Waiver Granted in ET Docket No. 10-24, Letter to J. Jeffrey Craven, 25 FCC Rcd 13744 (OET and WTB 2010) ("Waiver Letter"), attached hereto as Exhibit A.

The flexibility shown by the Commission in this regard has saved countless plant workers from unnecessary extended radiation exposure, giving them access to a two-way hands-free wireless communications system that provides clear uninterrupted communications within the very challenging environment of a nuclear plant. Because of the nature of the plant facilities, (thick cement and steel walls, enormous equipment, wide distances from containment buildings to the plants' security perimeter, often built substantially underground), the Commission has recognized that there is virtually no risk of interference from or to such operations and, in fact, over the long history of the Reactor Licensees' use of the Telex equipment there has been not one reported case of interference.

As the Commission now embarks on developing new and more intensive uses for parts of the television band, the Reactor Licensees are gratified by the Commission's continuing recognition of the special circumstances and requirements of nuclear plants for the continued use of Telex equipment for mission-critical applications. As requested by the Commission, the Reactor Licensees hereby and in the attached materials update the record to reflect the continued, indeed growing, reliance of nuclear plants on Telex equipment for mission critical applications within their facilities and the continued lack of viable alternatives for such applications.

Based on that record, and taking into account, as best they can be determined at this early stage, the portended changes in the use of the band, the Reactor Licensees submit for consideration two basic recommendations for rule changes to accommodate their use. First, that the rule waiver granted by the Commission in 2010 allowing nuclear plants to use Telex wireless headsets on television band frequencies without regard to distance separations, indoors only, be codified in Part 15 of the Commission's rules. And, second, as suggested by the Commission in the R&O and Further Notice and in its Public Notice requesting that the record in the wireless

microphone proceeding be refreshed, that the nuclear plants be made eligible under Part 74 of the Commission's rules for licensed use of Telex equipment at their plants.

To be clear, the Reactor Licensees understand and accept that such Part 74 licensing would be available only in circumstances where distance separation requirements can be met. Even with these limitations, the option to secure Part 74 licensing, consistent with the Part 74 technical rules, would allow the Reactor Licensees greater flexibility to use their Telex equipment in more limited outdoor applications at their facilities, such as when carrying fuel rods to storage locations.

This combination, Part 15 waiver codification for indoor use and Part 74 eligibility largely for outdoor use, would enable the Reactor Licensees to continue to meet their mission-critical communications requirements and also reduce worker dose and increase overall plant safety.

II. The Unique Circumstances and Proven Record of Non-Interference Support Permitting the Plants to Continue to Use Telex Equipment.

As the Reactor Licensees have explained in earlier Commission filings, including but not limited to the Petition for Waiver, attached hereto as Exhibit B (the "Petition"),[4] the 55 locations where the 104 nuclear plants are located are largely rural locations, ranging in size from 400 to 4,200 acres. Much of the use of the Telex equipment is in portions of the Reactor Licensees' buildings that are underground and often adjacent to major equipment, including huge cooling tanks of water which, together, further attenuate these 50 – 100 mW signals. In addition, the Reactor Licensees' use of the Telex equipment is intermittent and periodic, concentrated during refueling outages when, among other maintenance and refurbishing activities, spent nuclear fuel

[4] See NEI/UTC "Petition for Waiver," filed September 23, 2009 in WT Docket No. 09-176.

is removed and replaced with fresh fuel. These outages can last 37-40 days, and *occur only once every 18 – 24 months*.

These factors, together with the fact that the signals from the Telex equipment have a negligible potential to cause interference at distances greater than 2,000 feet, as supported by engineering exhibits in the Petition, limit the impact of the Telex equipment to the plants' grounds. In nine years of operating on a secondary basis in the broadcast bands, the Reactor Licensees have not received a single report of interference to television reception, nor has there been even one incident when a broadcast signal affected the Reactor Licensees' use of the Telex equipment. As such, there are numerous unique physical factors, as well as nine years of interference-free operating results associated with the Reactor Licensees' use of the Telex equipment, that, combined, demonstrate that interference need not be a concern when considering this request for regulatory flexibility.

III. The Public Interest Would Be Served if Nuclear Power Plants Were Eligible to be Part 74, Subpart H, Licensees.

The Reactor Licensees agree that expanding the eligibility provisions of Subpart H of Part 74 of the rules to allow nuclear plants to use low power auxiliary stations would be in the public interest, and would be consistent with other uses of such equipment authorized under subpart H of Part 74. The safe operations of the Reactor Licensees, as well as the reduction of employees' exposure to radiation, both of which are demonstrably enhanced through use of Telex equipment, are compelling public interest - and indeed public health - considerations, as the Commission clearly recognizes in suggesting Part 74 licensing for the Reactor Licensees' use of Telex headsets. In the Petition, the Reactor Licensees have exhaustive operating information, as well as engineering data, which demonstrate the unique and compelling need for Telex equipment to support mission-critical communications at the Reactor Licensees' facilities,

especially during outages when highly trained technicians operate in areas where higher levels of radiation are present.

Like other eligible users under Part 74, the Reactor Licensees have a need to occasionally use this equipment outdoors, because the movement of the spent fuel, from containment to the storage facilities inside the fenced perimeter security area, is a critical evolution with significant safety implications. The Commission asked for feedback on the need for outdoor use of this type of equipment and, based upon all of the survey results (including the one commissioned in November, 2012), the Reactor Licensees consistently note the significant safety benefit of using the same communications assets from the start of the delicate and highly choreographed process of raising of the fuel canisters in containment, all of the way out of the reactor building, and over to the outdoor storage facility. The Reactor Licensees also point to the substantial value of Telex wireless headsets for crane and other heavy equipment operations in the switch yard, where the margin for error is too close to allow dropped or garbled transmissions. Thus, permitting outdoor operations – as proposed by the Commission – is extremely important to the safe and efficient execution of certain nuclear plant operations, and to limit worker radiation dose. For those reasons, the Reactor Licensees urge the Commission to allow the licensed use of the Telex equipment both inside the plant buildings and outdoors, limited to the area inside the Reactor Licensees' fenced security perimeter.

IV. Part 74 Eligibility Should be Narrowly Defined.

As noted above, and as more fully described in the Petition, because of the unique operational requirements associated with the Telex headsets at the nuclear plants, eligibility can be narrowly tailored to "Power Licensees" as defined in Section 90.7 of the FCC's rules.

Further, such Power Licensees would have to own or operate nuclear power plants (or be a subsidiary of a Power Licensee providing supporting services to one or more plants). In addition, the Reactor Licensees would support the requirement that low power auxiliary stations must be certified for operations under Subpart H of FCC Rule Part 74.

V. Unlicensed Operation on Part 15 is a Critical Component of Meeting the Reactor Licensees' Communications Requirements and Should be Made Permanent.

In the R&O and Further Notice, the Commission provided for a temporary waiver of certain of its Part 15 rules to permit the unlicensed use of wireless microphones in the core TV bands, pending the completion of the Wireless Microphone proceeding. This waiver has been important because it enables both indoor and outdoor operation, albeit limited to 50 mW and only on TV White Spaces, which is useful to certain of the Reactor Licensees.

Following the January, 2010 R&O and Further Notice, the Reactor Licensees sought and were granted further relief – in the form of the Waiver Letter - to permit the use of Telex equipment at up to 100 mW and without regard to the co-channel distance separation requirement, provided that such use was indoors only and otherwise comported with the general waiver of Part 15 granted to all unlicensed microphone users. Because of the operating conditions inside many nuclear plants and the nature of the Telex equipment, it is sometimes necessary to operate at higher power levels than permissible under the general waiver of Part 15 (50 mW) and, for indoor operations, the co-channel separation requirements have been, demonstrably, unnecessary. The Reactor Licensees have operated pursuant to both of these waivers for over two years and have not experienced any interference, nor have they received any complaints of interference from other users or licensees.

Critical to note is the fact that, without this Part 15 operating option, the Reactor Licensees would not have had access to sufficient spectrum to operate enough of the Telex equipment needed for the plant activities described herein. As such, the Reactor Licensees hereby request that the Commission amend the Part 15 Rules in order to incorporate the operative terms and conditions of its general Part 15 waiver as well as the terms and conditions of the Waiver Letter to authorize the unlicensed use of Telex equipment, at up to 100 mW and without regard to co-channel distance separation requirements, inside buildings that are within the security perimeter of a nuclear power plant.

In issuing the Waiver Letter, the Commission evaluated the Petition and the related filings made by the Reactor Licensees and concluded that "(m)odifying the waiver conditions to allow use of Telex headsets inside nuclear plants will serve the public interest by ensuring that personnel working inside these plants have essential equipment for critical communications. In granting this modification of the waiver conditions we recognize that these devices employ relatively low power and nuclear plants are physically separated from receivers that could potentially receive interference."[i5] We offer as Exhibit C hereto draft language that would codify the Waiver Letter by adding a subsection (f) to the new Section 15.238 that the FCC has proposed to adopt for the unlicensed use of "wireless audio devices."

VI. The Reactor Licensees Continue to Rely on the Telex Base Stations and Belt-Packs to Meet Their Mission-Critical Communications Requirements.

The Commission also asked the commenters to update the record on whether there have been any material technological developments that could impact these issues. The Reactor Licensees can report that, over the past several years, including the survey just undertaken in November, 2012, as a group they have tested thirty-seven (37) potential alternatives for indoor

[5] Waiver Letter at p. 2.

operations and none of them have come close to providing the same level of hands-free use, reliability, clarity, full-duplex/multi-user/background noise reduction capabilities, and durability that the Telex equipment has provided. In most cases, the potential alternatives drop calls, literally fall apart, or cannot reliably operate inside the environment of thick-walls, heavy equipment and domed ceilings. Attached as Exhibit D is a Summary of the 2012 Survey of the Reactor Licensees' Use of Telex Equipment and Potential Alternatives.

The Commission's Public Notice states that Shure and Sennheiser both recently introduced digital wireless microphones that operate in the UHF band and can support between 12 and 15 microphones on a single 6 megahertz TV channel. The Reactor Licensees have reviewed both companies' new product offerings and have determined that they are more suited to the environment of a Broadway stage than the harsh and unyielding environment of a nuclear plant. Indeed, the information on the Sennheiser web site suggests that it is also focused on "small venues, conference rooms and houses of worship" as well as being well-suited for "dancers, singers and fitness trainers." Even if the Shure and Sennheiser headsets were found to be sufficiently durable, the Reactor Licensees are informed that these systems do not operate in full duplex mode, which is central to the Reactor Licensees' communications requirements. As such, these systems are not viable options for the Reactor Licensees.

Also, the Reactor Licensees continue to report that the workers must wear dosimeters that track exposure to radiation during outages and maintenance work in high radiation areas, at the same time as they wear the Telex headsets. They also report that all of the major dosimeter devices operate at higher frequencies that interfere with every hands-free, wireless communications device they have tested, except Telex. Since the dosimeters and the Telex equipment must be worn together, the choice of communications options is further limited.

In addition, the wireless signals of several of the potential alternatives tested by the Reactor Licensees literally bounce off of the reactor containment buildings' domed roof, resulting in signal deterioration and/or unacceptable levels of interference with themselves and with the other communications devices (including the dosimeters), operating at higher frequencies. The Reactor Licensees continue to report that the Telex equipment never has these problems. Indeed, as noted above, the surveys of the Reactor Licensees, taken in 2005, 2008 and in November 2012, demonstrate that the plants have dutifully investigated 37 alternatives to Telex; none of which was deemed to be an adequate replacement.

The Reactor Licensees have even sought-out developers at another major supplier of private land mobile radio equipment who initially expressed interest, until they learned that the market was limited to just 104 facilities, using perhaps 15 - 20 base stations and 60 – 70 headsets each. We discovered that the Reactor Licensees are simply not a large enough commercial "market" to justify the investment of time and money that would be required for the manufacturers to develop a new product that could meet the Reactor Licensees' needs.

We note that Telex has recently started selling its BTR 80N, which requires less bandwidth per channel. This enables the BTR 80N to be capable of fitting into narrower frequency blocks and, also, the BTR 80N can support nearly twice as many belt-packs as the earlier versions of the Telex equipment. However, over half of the Reactor Licensees observed a material degradation of the audio fidelity, as a result of the BTR 80N's narrowband technology. Even if the loss of audio quality were not objectionable, the BTR 80N is only part of a solution; without the requested Part 15 waiver codification and the Part 74, Subpart H eligibility, the Reactor Licensees will not have adequate access to spectrum to meet their communications requirements.

VII. 2012 Survey of Reactor Licensees' Telex Use and Testing of Potential Options.

NEI and UTC have worked diligently to collaborate with the Reactor Licensees in order to better understand how and why the Reactor Licensees use Telex equipment and to explore potential alternative communications devices that could, possibly, at least come close to providing the type of reliable, durable, hand-free wireless communications services offered by Telex. To that end, as noted above, in 2005, 2008 and again in the fall of 2012, NEI undertook a comprehensive survey of its member Reactor Licensees to determine if they still relied on Telex equipment and whether any of the alternatives they tested had been found to be worthy replacements. Just as in 2005 and 2008, the 2012 survey demonstrates that Telex continues to be the best choice for the plants' technical staff who must manage the communications requirements in and around the nuclear plants and also meet their NRC requirements to keep worker dose exposure "as low as reasonably achievable" ("ALARA"). The fact that Telex equipment operates in the broadcast spectrum enables the Reactor Licensees to operate simultaneously with the 2.4 GHz dosimeters that measure dose exposure and which must be worn simultaneously with the Telex equipment during outages and maintenance functions in areas with radiation, in order to meet the ALARA requirements.

The Reactor Licensees also report that Telex's operations over the broadcast spectrum avoids "multipath" interference and "reflected signal" from the domed ceilings of the plants' containment buildings that interfere with or weaken systems operating on other frequencies. It also enables outstanding coverage and audio clarity that blocks background noise unlike any other equipment tested by the Reactor Licensees.

The Telex equipment is also relied upon by the Reactor Licensees for its design and functionality that enables multiple headsets to be used simultaneously and that allows workers

dressed in heavy protective gear, including gloves, to manage the units in a hands-free manner. The plants also point to the fact that Telex equipment is far more durable than the alternatives, proving able to withstand the harsh industrial environments of the nuclear plants.

Simply put, the survey results from 2005, 2008 and 2012 uniformly confirm that Telex provides the best, most reliable communications devices - especially for indoor operations - for the plants. As such, Telex equipment facilitates optimal communications services that reduces worker dose and promotes plant safety, thereby helping the Reactor Licensees meet the ALARA standards. (See Exhibit D.)

VIII. Conclusion.

The Reactor Licensees strongly endorse the Commission's proposal to expand the Part 74, Subpart H, license eligibility, in recognition of the "special case" merits of the Reactor Licensees because there simply is no equal to the Telex equipment when it comes to providing the Reactor Licensees with the communications capabilities they need to promote the safe operations of their plants and the health of their workers. These facts, combined with the record of non-interference by the Reactor Licensees over the past 9 years, including both inside and outside operations, support the grant of the requested licensing rights, under Part 74, and the amendment of the Part 15 Rules, to enable the Reactor Licensees to access sufficient spectrum to meet their proven communications requirements.

For the foregoing reasons, the Commission should expand the eligibility provisions for Part 74 license eligibility, and codify the Reactor Licensees' current communications protocols under Part 15, in order to permit the Reactor Licensees to meet their mission-critical communications requirements. Only with this range of regulatory relief in place will the Reactor Licensees have a real opportunity to find enough spectrum to maintain their current operations and thereby promote worker health and safe plant operations.

Respectfully submitted,

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