

B. Many Of The Concerns Expressed By Commenting ITFS Interests Have Been Addressed In The Proposed Rules.

In response to the *Public Notice*, many ITFS licensees submitted comments that, while supportive of the Petition, expressed concerns regarding the continuing role of ITFS licensees as complex broadband MDS/ITFS systems employing return paths, cellularization, superchannels and subchannels develop. Those concerns certainly come as no surprise to the Petitioners, for they mirror in many respects concerns that were expressed by the ITFS licensees among the Petitioners and others during the Petition drafting process. Admittedly, as MDS and ITFS licensees choose to combine their spectrum into systems of increasing complexity, each particular ITFS licensee (as well as each particular MDS licensee) will be called upon to make greater sacrifices in individual control in order to maximize the performance of the system as a whole. Yet, as will be discussed below, Petitioners believe that the proposed rules have been drafted in a manner that preserves the underlying educational *raison d'etre* of the ITFS, while at the same time accommodating the reasonable needs of those wireless cable operators and MDS and ITFS licensees who elect to move towards the more complex system designs being demanded by the marketplace.

As a result of the close coordination with the educational community during the preparation of the Petition, many of the concerns now expressed by ITFS licensees have been addressed in the Petition. As the Commission considers the philosophic concerns being raised by some of the comments, it should keep in mind three fundamental precepts of the Petition:

1. No ITFS or MDS licensee can be forced to devote its channels to a cellularized transmission system or return paths without its consent;
2. Any ITFS or MDS licensee that does not desire to participate in a system employing advanced technology is protected against interference from those that do; and

3. Those ITFS licensees that do take advantage of the flexibility proposed in the Petition must still transmit as much ITFS programming as they do today.

In the view of the Petitioners, these three underlying elements are essential to the preservation of the underlying instructional purpose of the ITFS, while at the same time allowing those in the ITFS community with vision and evolving needs to employ advanced technologies to address those needs.

For example, Northeastern University (“Northeastern”) states that “the proposed rules must be premised on the understanding that cellularization of ITFS frequencies is permissive, not mandatory, leaving the choice with the existing ITFS licensee of whether to switch from the broadcast to cellular model.”^{51/} The Petitioners agree with that concept and, as the DL&A ITFS Parties correctly recognize,^{52/} the proposed rules already provide that it is the ITFS licensee and the ITFS licensee alone that is permitted to apply for and secure a booster license.^{53/} Similarly, the

^{51/} Northeastern Comments, at 3. Similar concerns were expressed by NIA. See NIA Comments, at 4 (“all licensing of all frequencies, including all subchannels and all superchannels, and all booster channels must be by the ITFS entity.”). In calling for licensing of subchannels and superchannels, NIA apparently has failed to recognize that, for the reasons set forth in Appendix D to the Petition, there is no need for the specific authorization by the Commission of superchannels or subchannels. See Weiss, *Rationale for Two-Way & Distributed Transmission Operations of Wireless Cable Systems*, at 18-21 (March 14, 1997)[hereinafter cited as “*Two-Way Report*”]. Since NIA fails to provide any discussion whatsoever of why specific authorizations to use subchannels or superchannels should be required, NIA’s proposal should be rejected.

^{52/} See DL&A ITFS Comments, at 4. The DL&A ITFS Parties also ask the Commission to confirm that, in the event that a booster station goes off the air, the main station protected service area will again include the area previously within the booster service area. See *id.* That is precisely what the Petitioners have suggested in the Explanatory Note to the proposed revisions to Section 21.913. See Petition, at Appendix B, pp 33-34 (“If a booster authorization is canceled, it is contemplated that the protection would revert back to being based on the initial technical configuration of the primary station (although any interference caused by facilities proposed or authorized in the interim will have to be grandfathered)”).

^{53/} The Petitioners continue to believe, however, that wireless cable operators or other
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proposed rules require the licensee of any ITFS channels that will be utilized for return paths to apply for a response station hub authorization.^{54/} As a result, it should be clear that no ITFS licensee can be required to participate in an advanced system against its will. Thus, any ITFS licensee that fears it may lose some element of control or may be unable to return to its current configuration should it withdraw from the combined system can protect itself with one simple word -- it can just say “no” when asked to participate.

Others have expressed a concern that adoption of the proposed rules will undercut the ITFS educational reservation.^{55/} Although the Petition does call for a revision to the Commission’s current channel loading rules in order to accommodate the need for full time use of ITFS channels for return

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lessees of ITFS channels should be permitted to submit notifications when low power boosters are installed, as is proposed in the proposed revisions to Sections 21.913 and 74.985. Because such facilities have limited power, are shared by numerous licensees, and must be installed and notification filed rapidly, there is inadequate time for each of the sharing licensees to submit an individual application. However, because notifications can only be filed by those with a lease or consent agreement with the ITFS licensee, the ITFS licensee can contractually exercise as much control over the process as it desires and, indeed, can ban the filing of notifications by the lessee. Not only is the approach supported by the Petitioners, but also by the DL&A ITFS Parties, who state that they “do not object to such an approach, so long as it is clear that the operator is not able unilaterally to continue to operate the booster on the ITFS channels in the event that the agreement between the operator and the ITFS licensee expires or terminates.” DL&A ITFS Comments, at 4. Under the rules proposed by the Petition, the operator cannot install a low power booster without the express consent of the licensee of each channel that will be used. Thus, the concerns expressed by the DL&A ITFS Parties can be addressed by in the context of the agreement giving that consent.

^{54/} See *Petition*, Appendix B, at 35 (defining a “Response Station Hub” as “a fixed facility licensed to an ITFS licensee”).

^{55/} See Archdiocese of LA Comments, at 2-6; CTN Comments, at 7.

paths,^{56/} it cannot be repeated enough that *the proposed rules do nothing to alter the core requirement that each ITFS licensee be required to transmit 20 hours of ITFS programming each week for each channel licensed to it, and that each ITFS licensee be required to use or have the right to recapture up to 40 hours for the transmission of ITFS programming each week for each licensed channel.*^{57/} For example, even should an ITFS licensee's entire channel allocation be employed for return paths, that licensee must provide for the transmission of ITFS programming on other channels

^{56/} See Petition, at 39-43.

^{57/} Thus, CTN's comments may be misleading in asserting that the Petition "suggests elimination of the instructional programming requirements which currently mandate that, if leasing excess capacity, an ITFS licensee must provide 'at least 20 hours per channel per week of ITFS programming on its authorized channels.'" CTN Comments, at 7. While CTN is technically correct in that the proposed rules would eliminate the requirement that ITFS programming be transmitted on the licensee's own channel and would instead permit transmission of that programming on any channel in the system, they do not reduce by one minute the amount of educational programming that an ITFS licensee must transmit.

comprising the system.^{58/} Thus, adoption of the proposed rules will result in no reduction whatsoever of the amount of ITFS programming that is transmitted.^{59/}

A few ITFS commenting parties have expressed a fear that the automatic application grant proposal advanced in the Petition could result in harmful interference in the event that an existing licensee is unable to identify erroneous interference analyses and petition to deny an application within the 60 day period afforded under the proposed rules.^{60/} Under the proposed rules, applications

^{58/} Because an ITFS licensee may choose to allow its channels to be used for return paths, even though it has no particular need for return paths, there is no reason to adopt NIA's unexplained assertion that "[a]ny use that a lessee makes of any facility must also be a use available to an ITFS licensee." NIA Comments, at 4. If an ITFS licensee desires access to return paths that will be established on its channels, the ITFS licensee can negotiate for that access with the wireless cable operator. There is no reason, however, why the ITFS licensee should be forced to negotiate for a benefit it has no need for, particularly since the receipt of that benefit may make it impossible for the ITFS licensee to secure benefits of more value to it. Once again, NIA is attempting to impose its view of what constitutes an appropriate lessor/lessee relationship on the ITFS community at large. The Petitioners believe, however, that it is the local educator that is best able to determine the educational needs of the community and to negotiate an agreement that best meets those needs. While it is appropriate for NIA to educate the ITFS community regarding available options in the negotiation of excess capacity leases, the public is not served by NIA's efforts to restrict licensee flexibility in the structuring of leasing arrangements.

^{59/} Both the DL&A ITFS Parties and the SW&M ITFS Parties have expressed legitimate concerns regarding the impact of the proposed channel loading rule changes on ITFS license renewal. *See* DL&A ITFS Comments, at 6; SW&M ITFS Comments, at 5. The DL&A ITFS Parties strongly endorse the proposed revision to Section 74.931(e)(9), which specifically states that ITFS licensees that do not transmit on their own channels do not jeopardize their right to license renewal so long as they transmit the necessary amount of ITFS programming on other channels. The SW&M ITFS Parties similarly call upon the Commission to "establish[] definitive standards by which ITFS licensees would earn a 'renewal expectancy,' similar to standards already adopted in the broadcasting and cellular services." SW&M ITFS Comments, at 5. Given this concern, the Petitioners believe it would not be inappropriate for the Commission to address ITFS renewal issues in this proceeding.

^{60/} *See* DCCC Comments, at 7; DL&A ITFS Comments, at 5-6. CTN has questioned whether the Commission will be able to adequately maintain the data contemplated by the proposed application processing and licensing system. *See* CTN Comments, at 14.

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for response station hubs and booster authorizations will be processed without extensive staff review of the supporting interference analyses, and automatically will be granted 61 days after appearing on public notice unless a petition to deny is filed or the Commission notifies the applicant otherwise. Those commenting on this plan express a fear that licensees will be unable to fully monitor applications for neighboring facilities, and may as a result fail to timely petition to deny proposed hubs or boosters. Thus, they propose that the licensee of facilities that are constructed pursuant to the proposed automatic grant provisions be required to cure any interference that actually results.

The Petitioners certainly appreciate the concerns these parties express. Under the proposed rules, applicants for new response station hub and booster authorizations are required to undertake detailed analyses to assure that the proposed facility complies with the Commission's rules. Although not specifically stated in the Petition, the Petitioners contemplate that if the interference analyses supporting an application proved to be erroneous (such as due to a data input error, a calculation error, or a methodology error) even after the application is automatically granted, the applicant would be required to cure any resulting interference.^{61/} For example, if as a result of a data input error the predicted desired-to-undesired signal ("D/U") ratio within a co-channel incumbent

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Representatives of the Petitioners have already met with the staff to begin the process of addressing database concerns, and are committed to working cooperatively with the Commission's staff to assure that appropriate databases are maintained and, to the extent possible and appropriate, applications can be filed electronically and the database accessed remotely.

^{61/} Because ITFS licensees will have an avenue for relief if a booster or response station hub is granted based on an incorrect interference analysis, the concerns expressed by PACE and the Archdiocese of Los Angeles to the effect that some ITFS licensees lack the financial wherewithal to monitor the filing of applications should be no impediment to adoption of the proposed rules. *See* PACE Comments, at 6; Archdiocese of LA Comments, at 5.

MDS station's protected service area was originally calculated to be 46 dB (thus satisfying the 45 dB standard and permitting automatic grant of the application), but would have been predicted to be 44 dB had the correct data been used, the licensee should be required to reduce its EIRP or take other action to assure the predicted D/U ratio satisfied the 45 dB standard regardless of whether the error was undiscovered until after the automatic grant of the application.

However, the Petitioners believe it would be inconsistent with the MDS and ITFS licensing schemes for the licensee of a booster or response station hub to be required to cure all actual interference that results from the construction and operation of new facilities. MDS and ITFS are services that have historically been licensed on the basis of predictions of interference based on certain assumptions, and licensees have generally not been entitled to protection from interference where their facilities have departed from those assumptions.^{62/}

^{62/} The Petitioners appreciate that the Commission stated in its *Declaratory Ruling and Order* addressing digital modulation in the MDS and ITFS that:

We believe that our current rules provide adequate mechanisms to deal with the potential for harmful interference, as well as actual interference. Section 21.902 of the Commission's Rules provides that MDS applicants, conditional licensees and licensees are expected to "cooperate fully" in attempting to resolve problems of potential interference before bringing them to the attention of the Commission, and are required to "[c]ooperate fully and in good faith" to resolve interference problems. 47 C.F.R. § 21.902(a) and (b)(2). Section 74.903 likewise provides that existing licensees and prospective applicants are expected to "cooperate fully" in attempting to resolve problems of potential interference before bringing them to the attention of the Commission. 47 C.F.R. § 74.903(c); see 47 C.F.R. § 74.903(d) and (e). As Petitioners articulate, "given the paucity of complaints of actual interference that the Commission has been called upon to resolve over the years, it appears that the existing policies work well." Reply at 7 n.14. In addition, we have declared with respect to MDS stations and ITFS facilities being leased or used for non-ITFS purposes, that if a station causes harmful interference within the protected service area of another existing station and the interference is not *de minimis*, "we will require the offending station to cease operations until the

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Most significantly, Sections 21.902 and 74.903 of the Commission's Rules mandate that all calculations of predicted D/U ratios assume that the receive site in question has installed upon it a receive antenna with certain gain and discrimination characteristics, that such antenna is oriented directly towards the desired transmitter site, and that such antenna is mounted at precisely 30 feet above ground level. The Commission has long recognized that these assumptions do not reflect the actual installation at most receive sites.^{62/} Although there is no requirement that reception antennas be mounted in any particular manner, those who install antennas with poorer discrimination characteristics than the standard reference antenna, at heights other than 30 feet, or oriented other than directly at the transmit antenna, accept any interference that results. Similarly, the rules mandate that all calculations of signal level assume free space. Thus, for example, foliage attenuation is ignored, although such attenuation might reduce the desired signal level at a given

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interference is eradicated. The station alleging that it is being interfered with will be required to make a clear and convincing showing that the interference is occurring." *Amendment of Parts 21, 74 and 94 of the Commission's Rules and Regulations with regard to the technical requirements applicable to the Multipoint Distribution Service, the Instructional Fixed Television Service and the Private Operational-Fixed Microwave Service (OFS)*, 98 FCC2d 68, 93 (1984). *See id.* at 92-93.

Digital Declaratory Ruling, at ¶ 36. The Petitioners believe, however, that when read in context — the Commission's rejection of an assertion that all actual interference should be cured by the station converting to digital modulation — it is clear that the quoted language is consistent with the position espoused here.

^{63/} *See, e.g. Amendment of Parts 21, 74 and 94 of the Commission's Rules and Regulations with regard to the technical requirements applicable to the Multipoint Distribution Service, the Instructional Television Fixed Service and the Private Operational-Fixed Microwave Service (OFS)*, 98 F.C.C.2d 68, 83-87 (1984); *Amendment of Parts 21, 43, 74, 78, and 94 of the Commission's Rules Governing Use of the Frequencies in the 2.1 and 2.5 GHz Bands*, 5 FCC Rcd 6410, 6422 (1990).

receive site and result in interference. Again, it is the incumbent licensee, not the newcomer, who bears the risk of such attenuation.

For these reasons, it would be inappropriate to mandate that the licensee of a booster station or response station hub be required to cure any actual interference caused by its operations. Under the current rules, ITFS and MDS licensees must often accept actual interference that results from co-channel and adjacent channel operations, and there is no reason to modify that approach at this juncture.

The comments submitted by Schwartz, Woods & Miller on behalf of the Board of Trustees of Community-Technical Colleges (Connecticut), Boston Catholic Television Center, Inc. (collectively, the “SW&M ITFS Parties”) propose that the Commission permit the “trading” of frequencies within the ITFS and MDS allocations to reduce the risk of harmful interference from the introduction of advanced technologies.^{64/} The Petitioners strongly support that proposal. The rules proposed by the Petition would have permitted ITFS licensees the ability to trade licenses across channel groups in order to promote the use of a contiguous block of adjacent channels for return paths.^{65/} The proposal advanced by the SW&M ITFS Parties would expand this approach to include the potential for placing ITFS licensees on channels currently available solely for MDS use. Adoption of this proposal will afford system designers increased flexibility in meeting the needs of the MDS and ITFS licensees by providing another tool for addressing interference concerns. As such, the Petitioners recommend that it be adopted.

^{64/} SW&M ITFS Comments, at 6.

^{65/} See *Petition*, Appendix B, at 36 (proposing revisions to § 74.902(d)).

Indeed, adoption of the SW&M ITFS Parties' proposal will also help address another common concern expressed by educators -- the difficulties that ITFS licensees may face upon termination of their relationship with the wireless cable operator if they have modified their facilities to take advantage of cellularization or have allowed all or part of their channels to be used for return paths.^{66/}

^{66/} See DL&A ITFS Comments, at 7-8; Northeastern Comments, at 7; CTN Comments at 15. While the Petitioners agree with NIA that "the actual deployment of the proposed cellular systems" will be complex, there is no basis for NIA's unsubstantiated assertion that an ITFS licensee who agrees to participate in a cellularized system will be forced to renew their leases because "there will be no way that an educator can extract him/herself from the system without disruption of the remaining elements of the system." NIA Comments, at 4. Assuming that the parties are afforded sufficient flexibility by the Commission to craft relationships that meet the individualized needs of the ITFS licensee, the wireless cable operator, and the other licensees that comprise the system, it should be possible to craft contractual arrangements that will accommodate any legitimate needs of each ITFS licensee. Adoption of the proposal advanced by the SW&M ITFS Parties will assist in that effort by allowing the "trading" of channels to facilitate post-relationship system design. Most importantly, however, an ITFS licensee that cannot craft an arrangement for post-relationship system design that is acceptable to it can always refuse to participate in the cellularization process.

NIA also purports to oppose cellularization on the ground that "except under unusual circumstances, an ITFS operator will never be able to use any portion of the frequencies of which it is the licensee." *Id.* That simply is not true. If a system is cellularized, there is no reason why an ITFS licensee's programming would have to be shifted to channels other than its own. Thus, the short answer to NIA is that if an ITFS licensee for some reason wants to assure that its programming is transmitted on its channels, that licensee remains free to insist upon it during contract negotiations. The Petition proposes no rule change that would prevent an ITFS licensee from mandating that its programming be transmitted on its channels in its agreement with the wireless cable operator.

Contractual arrangements are also the appropriate mechanism for addressing the concerns expressed by Northeastern and CTN regarding the financing of advanced technology systems and the implications of financing arrangements should the wireless cable system prove unsuccessful. Certainly, each MDS and ITFS licensee that agrees to become part of an advanced system should consider the financial implications. However, given the wide variety of situations that can arise and the varying requirements of investors in the wireless cable industry, there is no single solution that will be appropriate in all circumstances. It is certainly telling that neither

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Because the post-relationship needs of each educator will be different, the Petitioners believe the Commission should generally allow the parties to address post-relationship facility configuration issues by contract. Since the proposed rules provide licensee's with tremendous flexibility, any Commission mandate will undoubtedly prove counter-productive for many licensees. Take, for example, an ITFS licensee that agrees to permit some of its channels to be used for return paths as part of a wireless cable system. Upon the termination of the lease, that licensee might want to use all of its channels for downstream communications. And, it might want to employ a cellularized transmission system for that downstream capability. Or, the ITFS licensee might want to retain some response station capability. There is no "one size fits all" approach; rather, the best approach in any situation will depend upon the needs of the local educator. Thus, the Commission should generally leave it to each ITFS licensee to negotiate its own arrangements for post-relationship facilities.^{67/}

The DL&A ITFS Parties have recognized the problems associated with post-relationship facilities, and have proposed that the FCC mandate that each ITFS licensee be required to preserve one 6 MHz channel capable of downstream video transmissions to receive sites so that the ITFS licensee can at a minimum always engage in such transmissions should the ITFS licensee for some reason leave the wireless cable system. Acknowledging that there may be a need for all channels in

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Northeastern nor CTN propose any specific rules to address this problem, for the Petitioners cannot envision a single rule that would be appropriate in even a majority of the situations that can arise.

^{67/} The Petitioners note that the Commission's current rule barring ITFS licensees from entering into leases extending more than ten years has the effect of increasing uncertainty for the ITFS community. To the extent that educators are concerned that wireless cable operators will reconfigure the ITFS facilities in a market and then refuse to renew leases or employ that reconfiguration as leverage during renewal negotiations, an answer may be to permit ITFS licensees to enter into longer-term relationships with wireless cable operators.

an ITFS channel group to be used for upstream transmissions, the DL&A ITFS Parties proposed that the Commission allow ITFS licensees to swap channels to assure that this preservation can be accomplished. For example, it is proposed that if the A Group is to be used entirely for upstream transmissions, the A Group licensee could trade one of its channels for a channel in a group that will continue to be used for downstream transmissions.

The approach suggested by the DL&A ITFS Parties represents an innovative mechanism by which ITFS licensees can assure that their requirements are met even if they withdraw from a system. While the Petitioners would prefer that this approach be implemented contractually rather than by Commission fiat, the Petitioners would not object were the Commission to permit inter-group channel swaps and mandate that no licensee be permitted to employ all of its channels for return paths. In this manner, the Commission could accommodate the need for a contiguous block of channels for return paths, while assuring that if that block encompasses an entire channel group, the current licensee will continue to have downstream capability.

Finally, two commenting parties have questioned whether the proposed rule changes to promote superchannels threatens the independence of ITFS licensees.^{68/} Superchannels involve the transmission of a single signal over two adjacent channels which may be licensed to different licensees. It is contemplated that where superchannels are employed, they will be treated no differently than other channels in terms of the rules governing the preservation of the primary objective of ITFS. Thus, for example, if an ITFS licensee allows its channel to be employed as part of a superchannel but transmits no programming over that superchannel, the ITFS licensee will be required to meet its ITFS programming requirements on other channels. The relationship between

^{68/} See Northeastern Comments, at 4; CTN Comments, at 12-13.

the licensee of a channel¹ being used as part of a superchannel will be no different from that of any relationship between a channel lessor and lessee. Lessors and lessees would be held accountable for transmissions on superchannels on the same basis as they today are held accountable for any transmissions by a lessee.

C. Adoption Of Certain Suggestions Advanced By Commenting Parties Would Be Inconsistent With The Objectives Of The Petition.

In response to the Petition, several parties have advanced suggested changes to the rules proposed by the Petitioners. As set forth above, some of those suggestions have merit and the Commission should give serious consideration to incorporating them in any notice of proposed rulemaking. However, while no doubt well intended, other suggestions cannot be implemented without running afoul of the underlying purposes of the Petition.

1. The Commission Should Not Restrict Return Paths To MDS Channels 1 and 2/2A.

For example, Caritas Telecommunications, Inc. (“Caritas”), an ITFS licensee, appears to be proposing that return paths be restricted to MDS channels 1 and 2/2A.^{69/} The Petitioners respectfully disagree.

As the Petition and the comments submitted by ITFS licensees in response to the *Public Notice* demonstrate, there is a substantial demand within the educational community for ITFS wireless return path capabilities. One of the fundamental objectives of the drafters of the Petition was to assure that all ITFS licensees, regardless of whether they have chosen to affiliate with a

^{69/} See Caritas Comments, at 2.

wireless cable operator, should have enhanced flexibility in their use of the spectrum.^{70/} As comments such as those filed by PACE Telecommunications Consortium (“PACE”) demonstrate, a demand for two-way capabilities on ITFS channels exists among ITFS licensees that are not leasing excess capacity.^{71/} Adoption of Caritas’ proposal, however, would deny ITFS licensees the ability to use their own channels for return paths. Thus, to assure that all ITFS licensees have an opportunity to employ their spectrum more flexibly (subject, of course, to compliance with the proposed interference protection rules), the Commission should not adopt the restrictions proposed by Caritas.^{72/}

Moreover, adoption of Caritas’ proposal would artificially limit the amount of spectrum that could be employed by a wireless cable operator for the provision of return paths. Although it is too early to determine with any specificity, the petitioners suspect that many systems will require more than the 10-12 MHz available on MDS channels 1 and 2/2A for return paths. While the Petitioners

^{70/} See Petition, at 18 (“The proposed rules . . . have been carefully crafted to provide all ITFS licensees — whether or not they lease excess capacity for wireless cable operations — to take advantage of the potential that digital technology offers.”).

^{71/} See PACE Comments, at 2.

^{72/} Although not mentioned in Caritas’ comments, the technical statement accompanying the Caritas filing proposes that response transmitters be limited to 1 watt output power and a maximum of 30 dBi of antenna gain in order to control interference into adjoining markets. The Petitioners disagree. At the current time, it is uncertain precisely what operational requirements will be necessary for response channels to succeed. The regulatory environment proposed in the Petition will afford all licensees the flexibility to employ whatever response station equipment is required, while at the same time assuring protection of neighboring facilities. In conducting interference analyses, an applicant for a response station hub authorization will have to identify the number of response stations of a given configuration (*i.e.* output power, antenna gain, and height) that it intends to operate simultaneously, and demonstrate that such operations will not result in interference. See Proposed Section 21.909(c) and 74.939(c) of the Rules annexed as Appendix B to the Petition.

appreciate Caritas' effort to minimize the potential for harmful electrical interference from return paths, the interference protection rules proposed in the Petition meet that objective while allowing system operators the scalability they may need to meet increasing demands for return path capacity.

2. *The Commission Should Not Preclude Licensees From Consenting To Interference That Would Otherwise Be Prohibited Under The Commission's Rules.*

For reasons that are unexplained, the DCCC Commenters appear to propose that licensees should be barred from consenting to interference that would otherwise be prohibited by the Commission's Rules. If adopted, such a proposal would make it difficult, if not impossible, to implement many of the proposals advanced in the Petition, as well as preclude many of the collocation and digital conversion projects currently underway in the industry.

Since the DCCC Commenters provide no explanation of why the Commission should prohibit interference consents, the Petitioners cannot directly refute their rationale. Suffice it to say that with the numerous changes to the Commission's interference protection rules over the years — most importantly, the enlargement of the protected service area from a 15 mile radius to a 35 mile radius — the vast majority of applications for new or modified facilities include consents to interference. As adjacent markets are coordinated, it is commonplace for licensees to grant consents to interference in order to expedite the processing of applications and the launching of new services to the public. Indeed, the Commission has specifically validated the practice of modifying MDS interference rights through negotiation and written agreement.^{73/} The DCCC Commenters have failed to present any reason why this cooperative approach should be jettisoned, and the Petitioners are certainly at a loss to identify any benefit that would accrue from adoption of their proposal.

^{73/} See *MDS Auction Order*, 10 FCC Rcd at 9611.

3. *The Proposed Rules Governing Interference Protection To Response Station Hubs Should Be Retained.*

ComSpec Corporation (“ComSpec”), an engineering consulting firm, has expressed concern that the Petitioners proposed interference protection rule for response station hubs will make it difficult for licensees in closely-spaced neighboring markets to secure new or modified licenses.^{74/} While the Petitioners agree that response station hubs are well-protected against interference, and that in some cases such protection may impact adjacent market system design, the Petitioners believe that ultimately their approach is the most appropriate.

The causes of ComSpec’s concern are the parallel provisions of proposed Section 21.909(h) and Section 74.939(g) of the Rules, which provide that when an applicant for a new or modified station is required to demonstrate interference protection to a response station hub, it must assume the installation of an omnidirectional unity gain plane-polarized receive antenna at the response station hub site. As a result, the design of an adjacent market system cannot take advantage of any cross-polarization discrimination at the response station hub antenna that may exist.

The Petitioners do not disagree with ComSpec’s statement that “[t]he optimum system design for a response station hub would include the ability to incorporate both horizontal and vertical polarity along with antenna sectorization, gain and beamtilt to maximize reliable, interference-free reception from its response station area.”^{75/} Since a response station hub is likely to employ antenna sectorization and the use of both polarizations, ComSpec “urge[s] the Commission to consider a requirement for MDS and ITFS licensees to specify, and keep the Commission informed of changes

^{74/} See ComSpec Comments, at 1-2.

^{75/} See *id.* at 2.

in, the technical parameters of their response station hub receiving antenna systems” and appears to be proposing that neighboring systems be permitted to take advantage of cross-polarization discrimination in designing proposed facilities and demonstrating non-interference to hubs.

What ComSpec does not address is that response station hubs will likely evolve over time, starting perhaps with just a few antenna sectors of alternating polarity, with sectors subdivided over time as additional response stations are added to the system. As such, the polarization of the antenna serving any given azimuth from the hub could well change over time as the system moves to smaller and smaller antenna sectors of alternating polarization. This is illustrated by the figures below. Figure A represents a possible initial response hub design of four sectors, while Figure B represents a possible upgrade to eight sectors in order provide greater frequency reuse to meet increased demand.

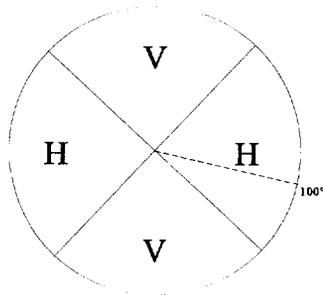


Figure A

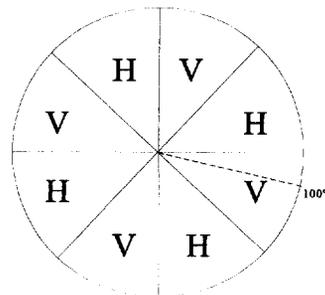


Figure B

Note that while the antenna pointed towards 100° from true north would initially be horizontally polarized, the antenna along that azimuth would shift to vertical polarization upon the facilities upgrade. If a new or modified station were to be licensed to operate with vertical polarization along that azimuth in reliance upon cross-polarization discrimination at any time between the initiation of the response station hub and the need for the upgrade, it would be

impossible for the response hub to be upgraded to meet demand without suffering interference. It is this possibility that the proposed rules are intended to avoid.

In crafting the proposed rules, it was believed that protecting the future ability of response station hubs to evolve in response to increased subscriber demand was of paramount importance, even at the possible cost of requiring adjacent market facilities to design around well-protected response hubs. Although the Petitioners recognize that this issue is a “double edged sword” upon which reasonable people can disagree, the Petitioners believe the approach advocated in the Petition is the better one and should be adopted in lieu of ComSpec’s suggestion.

4. *The Commission Should Reject CTN’s Call For An Increase In The Minimum Amount Of ITFS Material An ITFS Licensee Must Transmit.*

Although CTN’s comments are not entirely clear, it appears that CTN is calling upon the Commission to increase in those situations where digital modulation is employed, the current requirement that ITFS licensees transmit 20 hours of ITFS programming each week for each licensed channel.^{76/} The Petitioners strongly urge the Commission to reject that suggestion.

Simply stated, the Commission just recently decided not to impose any increase in ITFS programming requirements where digital modulation is employed when it issued its *Declaratory Ruling and Order* on the use of digital modulation by MDS and ITFS licensees.^{77/} This decision was consistent with an earlier decision of the Mass Media Bureau involving the Comband analog compression technology, where the Bureau ruled as follows:

^{76/} See CTN Comments, at 9.

^{77/} See *Digital Declaratory Ruling*, at ¶ 58.

The Comband system creates the potential for a significant increase in programming capacity with no increase in required bandwidth. We believe the maximum use and development of such capacity in an environment unburdened by regulation is to be encouraged. For this reason, licensees utilizing the Comband system will only be required to comply with the minimum service requirements for each assigned channel as a whole and will not be required to provide additional ITFS programming for each path created. Thus, as long as ITFS service is being provided on a channel for the minimum number of hours required by Section 74.931(e) of the Rules, the licensee using Comband has the discretion to offer other services concurrently with the ITFS programming. This will allow for the efficient utilization of available spectrum while assuring compliance with the ITFS use requirements of the rules.^{78/}

At this juncture, it would be counter-productive for the Commission to retreat from these decisions. The record in this proceeding establishes beyond any doubt that ITFS licensees will realize significant benefits from the new technologies the Petition is designed to accommodate. At present, however, many ITFS licensees are finding it difficult to satisfy the existing ITFS minimum programming requirements. Adoption of CTN's proposal would create a disincentive for ITFS licenses to introduce the new technologies contemplated by the Petition, for it would increase the ITFS programming obligation that is already in place. Thus, to promote the introduction of those technologies on ITFS stations, the Commission should retain its existing minimum ITFS programming rules subject to the revisions proposed in the Petition.

5. *The Commission Should Not Require The Amendment Of Leases That Already Contemplate The Introduction Of Advanced Technology.*

The Petitioners must disagree with the suggestion by the SW&M ITFS Parties that before any commercial operation can occur on ITFS frequencies using cellularization, sectorization or differing channel plans, the excess capacity lease agreement must be amended "to make clear that the wireless cable lessee and the ITFS licensee have together considered the rule changes adopted and made any

^{78/} *General Electric Co.*, 61 R.R.2d 143, 147 (P&F 1986).

appropriate changes to lease terms.”^{79/} Certainly, most excess capacity leases do not contemplate such technological advances as return paths and will have to be amended before ITFS channels are converted for return path use. However, some agreements may have contemplated return paths, and many of the agreements in existence today provide mechanisms for the introduction of antenna sectorization and/or cellularization. As such, there is no reason for the Commission to require amendments to all existing agreements. The parties, and not the Commission, are best positioned to determine whether proposed system changes require contract revisions. Since no ITFS facility can be modified without the execution by the licensee of an appropriate application form, every ITFS licensee will have an opportunity to consider its contractual rights and obligations before technical changes are implemented, and can insist upon an amendment if necessary.

6. *This Proceeding Is Not The Appropriate Vehicle, And The Record Does Not Support, The Proposed Authorization Of Modulation Techniques Other Than QAM Or VSB.*

PACE urges the Commission to utilize this proceeding to “immediately grant ITFS and MDS licensees the flexibility to use whatever digital modulation techniques best meet the licensees’ needs, with co-channel and adjacent channel interference controlled through the use of power spectral density limits and emission masks.”^{80/} Although the Petitioners appreciate PACE’s desire to use other modulation techniques (particularly frequency-shift keying (“FSK”)), this is not the appropriate proceeding for considering that proposal. As the Commission made clear in last year’s *Digital Declaratory Ruling*, those advocating policies with respect to digital modulation techniques other than Quadrature Amplitude Modulation (“QAM”) and Vestigial Sideband (“VSB”) must provide data

^{79/} SW&M ITFS Comments, at 7.

^{80/} PACE Comments, at 3.

demonstrating that such techniques can be employed without risk of interference.^{81/} Since PACE has not provided any such data, there is no basis for the Commission to develop appropriate policies for FSK or any other digital modulation technique.

7. *Interference Rules Based Solely On Power Spectral Density and Emission Masks Will Not Offer Interference Protection Akin To That Provided Under The Current Rules.*

Moreover, Petitioners believe that PACE's proposal to employ just power spectral density limits and emission masks to control interference, while attractive in its simplicity, would wreck havoc on existing MDS and ITFS licensees.^{82/} Indeed, when the drafters of the Petition commenced this project, it was hoped that a relatively simple approach could be employed. However, it soon became apparent that it is impossible to establish power spectral density limits and emission masks that would provide incumbent MDS and ITFS licensees the same level of interference protection they today enjoy. Because interference occurs when the desired signal is relatively strong compared to the desired signal, and power spectral density limits and emission masks only address the absolute energy, Pace's proposal would not assure protection to MDS or ITFS receive sites sufficiently close to response transmitters that they would receive unduly high levels of undesired signal. Although Pace's approach might have merit when establishing a new service utilizing unencumbered

^{81/} See *Digital Declaratory Ruling*, at ¶¶ 12, 46.

^{82/} *Id.* That the Commission must adopt technical rules that prevent interference even as it moves towards flexibility is illustrated by the decision to impose a 100 milliwatt ERP limitation on mobile IVDS response transmitters, rather than the 20 watt ERP limitation on fixed IVDS response transmitters. The Commission reasoned that “[w]e recognize that allowing unrestricted mobile operations promotes flexibility within the services, but it also increases the interference potential with respect to other services. Consequently, we conclude that a lower power limit is appropriate under such circumstances.” *Amendment of Part 95 of the Commission's Rules to Allow Interactive Video and Data Service Licensees to Provide Mobile Service to Subscribers*, 11 FCC Rcd 6610, 6617 (1996).

spectrum, power spectral density limits and emission masks cannot be crafted that will both assure a viable service and afford protection against interference akin to that which exists under the current rules. As the comments submitted by the ITFS community in response to the *Public Notice* make clear, it is of paramount importance that existing interference protection levels be maintained. The proposed rules accomplish that task (admittedly at the cost of some complexity) in a manner that PACE's proposal cannot.

8. *The Petitioners Have Provided The Commission With Sufficient Information To Validate The Methodologies Underlying The Petition.*

Finally, in light of the volume of information provided to the Commission, the Petitioners believe that the assertion by the DCCC Commenters that "there is insufficient information" in the record to validate the proposed methodology for studying potential interference from response stations is misplaced.^{83/} To the contrary, the proposed procedure by which an applicant for a response station hub authorization would be required to demonstrate that the aggregate power from authorized response stations will not cause interference to co-channel or adjacent channel facilities was reviewed extensively by individuals skilled in the art of MDS/ITFS interference analysis prior to its submission, and has been found sufficient. And, as is discussed in the *Two-Way Report*, this methodology was validated as conservative by extensive testing undertaken on behalf of the Petitioners in Tucson, AZ.^{84/}

Simply stated, the Petitioners have submitted ample information for the Commission to validate the proposed approach to interference analysis. Nonetheless, in order to permit the DCCC

^{83/} DCCC Comments, at 3.

^{84/} See *Two-Way Report*, at 26-37.

Commenters, the Commission or any other interested party to conduct an independent analysis, the Petitioners will file with the Commission under separate cover copies of the spectrum analyzer output for each of the 13,056 data files referenced at page 21 of the field test report that accompanied the *Two-Way Report*. More importantly, however, many of the objections raised by the DCCC Commenters can be traced to fundamental misunderstandings of Appendix C and its role in the licensing process.

An example of how the DCCC Commenters wrongly attack the regulatory regime proposed by the Petition is their complaint that “[t]here appears to be essentially no consideration of systems traffic and the manner in which interference could increase (and system capacity decrease) as total traffic loading per cell increases.”^{85/} The Petitioners certainly understand that as system traffic increases and the number of response stations operating at one time increase, the potential for interference increases. However, what the DCCC Commenters fail to appreciate is that the proposed rules have been carefully crafted to avoid any need for the Commission to become involved in questions of system traffic.

Sections 21.909 and 74.939, along with the methodology for interference analysis set forth as Appendix C to the Petition, provide for licensing to be based not upon the number of response stations that can be installed, but rather upon the maximum number of response station transmitters that can be operated simultaneously. It will be up to the applicant to determine the number of response stations in each class that it will need to operate simultaneously within a given region of a response service area. The applicant will be required to demonstrate that such stations can be operated simultaneously without causing harmful interference, and the response station hub

^{85/} DCCC Comments, at 5.

authorization will specifically limit the number of response stations in each class that can operate at a given time within a given region.

This approach was taken for an obvious reason -- it is the number of response stations operating simultaneously within an area that creates the potential for interference, not the total number of response stations that have been installed. While an applicant presumably will undertake traffic studies to determine the desired system design (including the location of response station hubs, the classes of response stations to be employed in connection with each, and the number of response stations in each class to be operated simultaneously in each region), that analysis is of no moment for purposes of predicting interference. Applying a limit to the number of simultaneously operating response transmitters determines a fixed maximum level of interference that will not be exceeded, will permit applicants to seek the largest number of such transmitters that their particular interference situations will support, and will permit continuous advances in system implementation within that constraint. It is the output of the traffic analysis -- the number of simultaneously operating transmit sites of each class in each region -- that is important, not the input.

Similarly, the DCCC Commenters appear to misunderstand Appendix C when they assert that the Petitioners have failed to explain to what extent the grid of points employed to calculate potential interference are “statistically representative of the distribution of transmitters to be expected within the response service area.” Obviously, it is impossible to predict with certainty where response stations will be located until subscribers request service. However, both the *Two-Way Report* and the proposed methodology set forth at Appendix C very painstakingly define a grid of points sufficiently large to assure that a smooth field will be created outside a response service area (“RSA”), thereby assuring that the grid will be statistically representative of a uniform distribution

of response transmitters within the RSA. The methodology mandates the performance of a specific test that ensures that a sufficient number of points (a large enough sample size) is included in the grid definition.^{86/} This uniform distribution of transmitter locations for analysis purposes, taken together with the procedure provided to weigh the interfering transmitter power levels according to population density of the RSA or regions thereof, will ensure that a statistically representative field is analyzed in all directions from the cell. After this, the total number of simultaneously operating transmitters in a class is determined and distributed throughout the RSA as described in the methodology. As noted above, the response station hub authorization will restrict operations to this total number of simultaneously operating transmit sites as a constraint. Thus, with a uniform distribution of transmitter locations, loading of these locations based on population density, and a constraint to operate no more than the total number of simultaneous response transmitters as utilized in the analysis, the analysis will result in a conservative calculation of the interference likely to be caused, offering greater interference protection in practice than predicted.^{87/} Similarly, the concerns expressed by the DCCC Commenters regarding the use of a five-mile radius cell for the testing in

^{86/} The DCCC Commenters are correct in summarizing that the methodology proposes the employment of U.S. Census Bureau data, but are wrong in suggesting that additional data needs to be employed “to avoid the inherent bias in residential data which would underestimate business usage and hence the level of likely interference.” DCCC Comments, at 5. As a practical matter, the use of residential data, without any adjustment for business use, will result in the creation of additional regions within response service areas in order to meet the uniformity of population test required by the methodology. Although additional regions tend to reduce somewhat flexibility in the location of response stations, the more regions that are created, the more accurate predictions of interference tend to be. Thus, contrary to what the DCCC Commenters suggest, the reliance solely on residential data will result in less interference, not more.

^{87/} See *Two-Way Report*, at 26-30.