

of 1993, Pub. L. No. 102-389, 106 Stat. 1571, 1610 (1992), that 8 percent of the total value of NASA's prime contracts and subcontracts be awarded to SDB firms NASA further explains that the set-aside was conducted pursuant to a determination made under 10 U.S.C. 2304(c)(7) (1988) [the DoD and NASA counterpart to 41 U.S.C. 253(c)(7)] that it is in the public interest to use other than competitive procedures for this procurement.

(Id. n. 1).³

In the context of a procurement protest, a determination by the head of an agency to limit competition in the public interest will not be reviewed by the GAO. (See Acumenics Research and Technology, Inc. -- Contract Extension, B-224702, 87-2 CPD ¶ 128). However, a protest will be entertained by the GAO if the agency head does not follow the procedures prescribed by CICA and implemented by the FAR. (See id. (protest sustained because agency head did not comply with 30-day Congressional "report and wait" requirement)).

It would appear that if the GAO in Affiliated Precision did not contest the use of the Public Interest exception to comply with a statutory goal of increasing small business

³ Agency heads have also limited competition citing the Public Interest exception in non-statutory contexts, such as for the design and procurement of chemical/biological masks (Ames-Avon Industries -- Recon., B-227839, B-227839.4, 87-2 CPD ¶ 150), and for the construction of family housing in the Philippines to support political and economic objectives (Zublin Delaware, Inc., B-227003, B-227003.2, 87-2 CPD ¶ 149).

participation in federal procurements, it would not entertain a protest questioning the use of the Public Interest exception to comply with a statutory mandate, especially in view of GAO's position that it will not review such discretionary decisions of an agency head. (See Acumenics, supra).

3. Unusual and Compelling Urgency Exception

CICA also recognizes that an executive agency may limit competition on a particular procurement:

When the agency's need for the supplies or services is of such unusual and compelling urgency that the Government would be seriously injured unless the agency is permitted to limit the number of sources from which it solicits bids or proposals

(41 U.S.C. § 253(c)(2); FAR § 6.302-2(a)(2)).

As with the Public Interest exception, the FAR prescribes procedures for the utilization of this exception.

Thus, when relying on this exception, an agency must:

- Support its decision to limit competition with a written justification and approval ("J&A"); and
- Request offers from as many sources as is practicable under the circumstances.

(FAR § 6.302-2(c)(1)-(2)). The J&A may be prepared and approved after the contract is awarded if its preparation and

approval prior to award would unreasonably delay the contract. (Id.; 41 U.S.C. § 253 (f)(2)).

Agencies have justified restricting competition pursuant to the Unusual and Compelling Urgency exception in a variety of circumstances:

- To provide test results to Congress prior to Congress' consideration of FY1988 appropriations based on Congressional direction in the FY1987 Authorization Act to "submit a plan for testing and evaluating the Bradley's combat survivability." (Fairchild Weston Systems, Inc., B-225649, 87-1 CPD ¶ 479);⁴
- To comply with requirements of the Clean Air Act (K-Whit Tools, Inc., B-247081, 92-1 CPD ¶ 382 (protest sustained because urgency was created by agency's lack of advance planning));
- To award a sole source contract to the only firm the agency reasonably believed could meet its needs for radioactive waste management services within the time available (RSO, Inc., B-250785.2, B-250785.3, 93-1 CPD ¶ 489); and
- To procure x-ray security screening systems for use in the federal court system (Heimann Systems Co., B-238882, 90-1 CPD ¶ 520).

The FCC has aggressively pursued the requirements of the Budget Act within the constraints of its required rulemaking procedures, and it has only now, after full public proceedings, determined that it will require the services of a support contractor. In such circumstances, it would appear

⁴ In Fairchild, the GAO upheld the agency's reliance on this exception in the circumstances presented but, nonetheless, sustained this exception on procedural grounds because the agency did not solicit proposals from "as many sources as is practicable under the circumstances."

that limiting competition under this exception is appropriate, since there is insufficient time for the FCC to obtain those services using full and open competition and still meet its statutory obligations.

IV. **CONCLUSION**

Either the Public Interest or the Unusual and Compelling Urgency exception to full and open competition would appear to permit an agency to limit competition to comply with a statutory requirement. The Public Interest exception requires the agency head to sign a D&F asserting that the limitation on competition is in the public interest. If the procedures prescribed in CICA and the FAR are followed, GAO will not review the agency's decision. This exception can only be used if no other exception is available.

An agency may also limit competition when faced with an Unusual and Compelling Urgency and where not doing so would cause serious injury to the Government. A decision to invoke this exception must be supported by a J&A and proposals should be solicited from as many sources as practicable. Under this exception, a sole source award is justified where

the agency reasonably believes that only one firm can meet its needs within the time available.

* * *

Please contact us if we can be of further assistance.

Wiley, Rein & Fielding

PCIA's Commitment To Public Health And Safety



Demonstrating their commitment to resolving important E-911 issues, PCIA, the National Emergency Number Association (NENA) and the Association of Public-Safety Communications Officials (APCO) have agreed to work jointly on a broad range of technical and consumer issues regarding PCS access to emergency service providers, including:

- Ability to dial 911 without restriction from any PCS terminal;
- Call control or call back capability;
- Proper Public Safety Answering Point (PSAP) routing;
- Hearing impaired and TDD access; and
- Caller location information.

DUPLICATE

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)
)
Amendment of the Commission's) GEN Docket No. 90-314
Rules to Establish New Personal)
Communications Services)

PETITION FOR RECONSIDERATION

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OFFICE OF THE SECRETARY

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December 8, 1993

SUMMARY

In its *Second PCS R&O*, the Commission adopted a regulatory framework that promises to bring PCS closer to reality for all Americans. Telocator strongly supports the Commission's actions and looks forward to continuing its work with the Commission staff in ameliorating the numerous implementation issues that will undoubtedly arise as PCS is introduced. As the Commission is well aware, Telocator, principally through its broad-based membership of both existing and emerging PCS interests that includes cellular carriers, paging operators, cable system operators, interexchange and local exchange carriers, consulting engineers and equipment manufacturers, has been a leader in providing a forum to discuss the astounding number of technical and organizational issues surrounding PCS.

To this end, Telocator has reviewed the Commission's *Second PCS R&O* and is pleased to note that many of the ideas and concepts that originated in the Telocator PCS Section meetings have found their way into the Commission's rules. Given the scope and complexity of the task, it is clear that the Commission took great care in attempting to craft rules that are fair from a number of perspectives. Telocator appreciates the Commission's efforts.

Nonetheless, Telocator believes that a number of technical issues are raised in the adopted rules that are either ambiguous, confusing or that place PCS operators at a technical and economic disadvantage to other commercial mobile service providers. In order to clarify these rules and ensure the rapid introduction of new PCS systems and devices, Telocator believes the Commission should:

- ***Increase the Maximum PCS Power Levels from 62 Watts ERP to 1,000 Watts ERP for Base Stations and from 1.2 Watts ERP to 12 Watts ERP for Some Mobiles.***
Telocator's requested increase in the power limits will improve operators' ability to

deploy high-quality, low-cost, and ubiquitous systems. Specifically, the changes are dictated by sound engineering design practices to allow balanced communications paths; will permit use of wide area transmitters to provide economic coverage in low density areas; and will facilitate the deployment of efficient spread spectrum and "smart antenna" technologies.

- ***Extend the Out-of-Band Emissions Criteria To Govern IntraPCS Interference and Clarify the Out-of-Band Emissions Measurement Rules.*** Telocator believes the out-of-band emissions limits to protect adjacent microwave bands from PCS should be extended to protect against intraPCS adjacent channel interference. In addition, the resolution bandwidth should be specified as 1.0 percent of the emissions bandwidth.
- ***Modify the PCS-Microwave Interference Criteria To Allow Greater Flexibility To Implement Industry-Derived Consensus Solutions.*** While Telocator applauds the FCC's efforts to integrate draft TIA revisions to TSB10-E into the rules, the FCC may have unintentionally constrained the industry's ability to implement consensus resolutions to PCS-microwave engineering problems. To ensure optimal deployment of PCS, Telocator believes reorienting the rules to allow greater flexibility to TIA is warranted.
- ***Clarify the Application Filing Rules.*** In the *Second PCS R&O* and the newly proposed auction rules, there are a number of discrepancies regarding the filing of site specific information. In order to clarify what is required of applicants and ease filing and processing burdens, Telocator proposes an electronic filing scheme for site-specific information and suggests changes to the accuracy required in such filings.
- ***Restate the Licensing Areas in Terms of Counties Rather Than Relying Upon a Proprietary Map System.*** The *Second PCS R&O* adopts license areas based upon maps contained in Rand-McNally's Commercial Atlas and Guide. In order to avoid problems with use of copyrighted material, Telocator suggests redefining the license areas in terms of counties included within each service area.
- ***Clarify the Mandatory Applicability of the Uncontrolled Environment Distinction for RF Exposure Evaluations.*** Telocator notes that there is a discrepancy between the text of the *Second PCS R&O*, which states that PCS handsets are deemed to operate in an uncontrolled environment, and the rules, which state that all PCS transmitters are deemed to operate in an uncontrolled environment. In this case, Telocator suggests conforming the rule language to agree with the text in the order.
- ***Increase the "Listening" Period and Frame Time in the Unlicensed Device "Listen-Before-Talk" Protocol.*** In order to accommodate the needs of some new devices, Telocator suggests extending the listening period and associated frame time from 10 to 20 milliseconds. This will permit a broader range of PCS devices to be deployed without perceptibly affecting the delay experienced by users.

Adoption of these limited modifications upon reconsideration will greatly facilitate the expeditious deployment of economic and high-quality wireless PCS systems and devices.

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)
)
Amendment of the Commission's) GEN Docket No. 90-314
Rules to Establish New Personal)
Communications Services)

PETITION FOR RECONSIDERATION

Telocator, the Personal Communications Industry Association, hereby respectfully requests reconsideration of the Federal Communications Commission's Second Report and Order in the above-captioned proceeding.¹ In order to better promote the successful introduction of competitive and functional Personal Communication Services ("PCS"), Telocator submits these suggested modifications to the technical parameters for PCS operations.²

I. MAXIMUM PERMITTED POWER SHOULD BE INCREASED.

In the *Second PCS R&O*, the Commission adopted maximum power levels that it believed would accommodate most PCS operations while providing a further degree of protection to incumbent microwave facilities.³ Specifically, the Commission adopted a

¹ Second Report and Order, Gen Docket No. 90-314, adopted September 23, 1993, [58 Fed. Reg. 59174 (1993)] (*Second PCS R&O*).

² To the extent necessary, Telocator respectfully asks for waiver of Section 1.429(d) of the Rules which limits petitions for reconsideration to 25 double spaced pages. Although the actual text of Telocator's petition is less than 25 pages, the associated attachments result in the entire filing exceeding the page limit. Since the attachments provide pertinent information, Telocator believes that their inclusion provides benefits that far outweigh any harm caused by exceeding the page limit.

³ *PCS Second R&O* at ¶156.

maximum power level of 62 Watts ERP (100 Watts EIRP) for PCS base stations and a 1.2 Watt ERP (2 Watt EIRP) maximum power level for mobile units.⁴

Telocator believes that the Commission's decisions are overly restrictive and will have a significant impact on the ability of PCS operators to provide economical coverage in rural and low density suburban areas. More importantly, however, sound engineering techniques necessitate higher base station powers to provide for balanced communications paths even in microcellular environments. Further, the low permitted power will prove particularly severe for systems employing time division or code division multiple access technologies ("TDMA" or "CDMA"). As detailed below, Telocator urges the Commission to raise the maximum permitted power for PCS base stations to 1,000 Watts ERP.

In addition, although the 1.2 Watt ERP limit on PCS subscriber units may be appropriate for hand-held units that operate in close proximity to the body, there are a wide variety of cases where higher powers will be needed for mobiles whose radiating elements are separated from the user, such as vehicle mounted mobiles and transportable units such as temporary phone booths. To this end, Telocator urges the Commission to also raise the maximum permitted power for such "non-proximity" mobile units to 12 Watts ERP.

Base Station Power: In its *Second PCS R&O* the Commission decided that providing coverage to low population density areas is an important FCC objective and required PCS operators to provide service to 90 percent of the population located within their licensed

⁴ *Id.* Although point-to-point microwave and the satellite services have traditionally used EIRP, the mobile services have traditionally relied upon ERP. Since PCS will be a mobile service, it would reduce confusion if Part 99 were consistent with the other mobile radio service rules, i.e., Parts 22 and 90, and standard industry practices. Thus, to reduce confusion, Telocator has restated the Part 99 Rules in terms of ERP.

service area.⁵ Crucial to economically servicing these low density areas, however, is the ability to serve large areas with a small number of base stations. The 62 Watt ERP precludes wide area coverage and will require PCS operators to deploy hundreds of extraneous transmitters merely to satisfy their coverage requirements.

Perhaps even more important than the economic factors, the low power limit will seriously effect engineering considerations in the design of PCS systems. For example, the 62 Watt ERP limit will seriously disadvantage emerging radio technologies utilizing TDMA or CDMA technologies. If PCS systems were going to use single channel per carrier systems (such as analog AMPS or narrow band FDMA digital systems), the 62 Watt ERP limit would be far less constraining, since each individual voice channel would have full use of the allowed 62 Watts. In contrast, radio technologies utilizing TDMA and CDMA must share the same 62 W ERP limit among multiple voice channels.⁶

Imposing such limits on base station power also constitutes a serious barrier to the use of "smart antenna" concepts. In smart antennas, multiple elements focus or concentrate transmitted power toward the mobile unit on the downlink and directionally receive transmissions from the mobile unit on the uplink. The net effect is a significant increase in

⁵ *PCS Second R&O* at ¶134.

⁶ An IS-95 CDMA system operating with a 1000 watts ERP radiates about the same amount of power as an N-AMPS system (or a 10 kHz FDMA digital system) operating over the same amount of spectrum at 62 watts per channel. The CDMA transmitter would occupy 1.25 MHz with a power of 1,000 watts. In contrast, an N-AMPS system with 10 kHz channels would use the same 1.25 MHz for about 18 separate base station transmitters (assuming a frequency reuse factor of 7). At 62 watts per channel, the N-AMPS system would radiate a total ERP of 1,116 watts. Although the total radiated power is about the same, the FCC's rules would discourage the use of the more spectrum efficient technology.

An alternative approach to simply raising the ERP limit per radio channel is to specify a "power per Hz of bandwidth." This would reduce the bias against some of the newer more spectrum efficient technologies at the cost of increasing the procedural complexity of this docket.

receiver sensitivity and a more effective use of transmitted power from the base station.⁷ In addition to extending base station transmitter range, smart antennas have the additional benefit of reducing co-channel interference to other PCS operators or to microwave receivers. Crucial to the concept of smart antennas, however, is the ability to use very high antenna gains to produce highly directionalized, higher base station ERP and allow reception of low signal strength signals from mobiles. With a base station ERP limit of 62 Watts, the additional expense of smart antennas cannot be justified. However, with significantly higher ERP limits on base stations, smart antennas can make a significant contribution towards the Commission's goal of wide area availability.

Even without the use of "smart antennas," most system deployment plans will be significantly limited by the current 62 Watt ERP limit. For example, Exhibit A provides typical link budgets for wide area coverage, i.e. situations where the call level is low enough that smaller cells are not needed to provide additional capacity.⁸ The power link budget shows that a base station with a 316 Watt ERP can communicate with a 1.2 Watt ERP mobile with path losses up to 152 dB. Using one of the standard propagation models (COST231), these powers will allow communications for up to 13 miles in rural areas, assuming the absence of any obstructions. In urban areas the same margin will provide coverage for less than 2 miles assuming no obstructions. Factoring in building obstructions will further reduce the resultant coverage areas.

⁷ ArrayComm has made a formal presentation [JTC (Air)/93.1101-412] to the Joint Technical Committee on Wireless Access of T1P1.4 of the Alliance for Telecommunications Industry Solutions and TR 46.3 of the Telecommunications Industries Association. The Telocator PCS Section is also aware of several other manufacturers that have similar proposals.

⁸ While the specific parameters of DCS-1900 are assumed in the two Exhibits, the overall conclusions are applicable to most of the systems that have been presented in the Joint Technical Committee on Wireless Access.

In cases where higher base station antenna gain is available, even higher base station ERP is appropriate. Exhibit B presents another link budget using a "smart antenna." The resulting 5 dB increase in base station antenna gain over the scenario detailed in Exhibit A results in a base station ERP of 1 kilowatt while the mobile ERP remains at 1.2 Watts. This increased base station ERP produces a corresponding 5 dB increase in allowable path loss. This would increase the rural service radius to 18 miles and double the area served. In addition, other PCS applications also benefit from increased base station antenna gain and the corresponding increase in base station ERP. For example, "ribbon coverage" on rural highways could be provided by using two high gain dishes that are pointed along the highway.

The request to use higher powers for PCS base stations is consistent with the current 800 MHz cellular rules that permit 800 MHz cellular base stations to operate with up to 500 Watts ERP.⁹ Assuming for arguments sake alone that propagation conditions at 1800 MHz are identical to those at 800 MHz -- obviously a best case assumption -- the differences in antenna effectiveness (for the same coverage pattern) would require PCS ERP to be 5 times the cellular ERP for comparable conditions (i.e., 2.5 kilowatts ERP). Thus, Telocator's recommended ERP limit of 1 kilowatt would still place PCS at a substantial disadvantage relative to cellular in its ability to cover sparsely populated areas. This is particularly important considering that the *Second PCS R&O* mandates that by the end of the 10th year of licensing, PCS operators must provide coverage to at least 90 percent of the population in

⁹ Section 22.905 of the Commission's Rules.

their service area.¹⁰ The adopted base station ERP limit of 62 Watts will significantly impair the ability of PCS operators to satisfy the FCC's position that broad PCS coverage is an important public interest benefit.

Telocator realizes that increasing base station power might appear to raise issues about RF exposure, protection of existing microwave stations, and service area extensions. In its *Second PCS R&O*, however, the FCC has already adopted other rules that fully address those issues independent of the maximum permitted power.

Concerns on RF exposure levels are better addressed by the imposition of the ANSI/IEEE C95.1-1992 exposure standard.¹¹ In general, however, base stations with ERP above 62 Watts would be installed on towers in areas where public access is precluded. Thus, raising the allowed base station ERP above 62 Watts will not increase exposure risks to the general public. Also, company safety procedures that are already in place will protect technicians that working in proximity to the base stations. In many cases, company procedures require that the transmitters be placed in a non-radiating condition before any access to the tower is permitted.

Furthermore, increasing allowed base station ERP will, in some cases, allow a reduction in the operating power of subscriber devices because the increase in base station ERP limits will allow the use of higher gain base station antennas. Since many PCS systems use the same antenna for both transmitting and receiving, higher gain base station antennas

¹⁰ Section 99.206 of the Commission's Rules. In contrast, the "build-out" requirements for the cellular radio service are less onerous and, in any case, do not threaten cellular operators with loss of license for failure to achieve construction benchmarks. Instead, cellular operators choosing not to provide service to a particular area of their Cellular Geographical Service Areas simply lose their authority to provide service to that area and are then subject to the filing of applications for "unserved areas." See Sections 22.43 and 22.903.

¹¹ This matter is fully addressed in ET Docket No. 93-62, Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, 8 FCC Red 2849 (1993).

will increase base station receiver sensitivity. Increases in base station receive antenna gain allow a 1:1 reduction in handheld transmitter power.¹² Thus, increasing the allowed base station ERP will promote reduced RF exposure to the general public.

Telocator also recognizes that higher PCS power limits may have some effect on the incumbent fixed microwave systems. For example, microwave stations located farther away from the PCS base station would need to be formally included in the coordination process. This, however, is easily achieved by an expansion of Table 2 in Section 99.233(a) using standard FCC formulas. Also, by increasing PCS base station power, the power received by microwave receivers could be increased. Again, the existing coordination procedures are adequate to ensure that no increase in real interference is realized. Telocator fully expects that, in many cases, the interference protection afforded to microwave facilities will preclude PCS base station operations at the proposed 1 kilowatt. Telocator submits, however, that these coordination procedures should be the limiting factor for PCS base station power and not an arbitrary government-imposed limit.

Another potential Commission concern is that PCS licensees may use higher powers to "extend" their service area beyond that licensed to them. Again, the FCC's new Rules adequately address this issue without the need for limiting power. When the language of Section 99.232 (47 dBuV/m) is combined with the text in footnote 130, it is clear that increased base station powers will no result in service extensions.

Mobile Power: Although Telocator understands that many PCS applications can be accommodated by a mobile ERP limit of to 1.2 Watts ERP, there likely will be important

¹² All PCS mobiles will include automatic power adjustment so that the actual transmitted power is reduced to the level needed at that particular time. Even without the mandate in Section 99.231(b) of the Rules, the desire to extend mobile battery life and maximize system capacity would insure that PCS systems include automatic power adjustment.

applications where a higher power limit is justified. Specifically, where the antenna is not in the proximity to the user, Telocator proposes that the permissible operating power be raised to 12 Watts.¹³ An example would be vehicle mobiles where the antenna is located on a metal roof that shields the passengers from RF exposure.

While a hand-held PCS device operating at 12 Watts ERP poses questions regarding RF exposure, the separation required to lower the exposure below the "uncontrolled" limits in ANSI/IEEE C95.1-1992 is measured in inches. Thus, in situations where users and the other members of the general public will be separated from the antenna by more than a few feet, the use of 12 Watts ERP mobiles does not raise an RF exposure issue.

Allowing vehicle based mobile units to use 12 Watts ERP can be an important consideration in providing service in rural areas. There are also other applications where this capability will provide important benefits to the public, like temporary facilities to provide additional capacity to supplement normal landline capabilities such as special events or disaster relief efforts (e.g. FEMA). In addition, when landline facilities are impaired, PCS facilities can provide temporary service to the general public when no alternatives are readily available. It is expected that these applications will use high gain antennas to maintain the important balance between transmit and receive paths.

As a result, Telocator proposes that the FCC establish a separate class of mobile devices utilizing external antennas which are allowed to operate at power levels up to 12 Watts ERP. Note, that this request is independent of Telocator's request for base station

¹³ At 1.8 GHz, 10 dBd antennas are compact enough to be usable in many portable applications. A 10 dBd antenna combined with a 1.2 watt radio produces 12 watt ERP.

ERPs up to 1 kW. As discussed above, there are a number of cases where a 1 kilowatt base station and 1.2 Watt mobile units will result in a balanced link.

* * * * *

In summary, retaining the existing base station ERP limit of 62 Watts would impede the ability of PCS operators to economically provide service to citizens located in small towns and rural areas and imperil the Commission's stated objective of providing PCS service to 90 percent of the population by the 10th year. It would also impose severe operating restrictions on new technologies such as TDMA and CDMA. To resolve these issues, Telocator proposes that the limit on base station ERP be raised to 1,000 W. This represents only a doubling in the allowed cellular power, far less than the impact of the frequency change alone.

II. THE COMMISSION SHOULD ADOPT EMISSION LIMITATIONS THAT REDUCE INTERFERENCE POTENTIAL BETWEEN ADJACENT CHANNEL PCS OPERATIONS.

The emission limits specified in the *Second PCS R&O* apply only to emissions outside the PCS band, i.e., no explicit protection is provided to other PCS operators using different frequency blocks in the same area. Telocator believes that intra-PCS protection should also be mandated. Therefore, Telocator proposes that the Commission revise Section 99.234(a) to apply the limitations imposed for out of band emissions to the PCS spectrum as well. In addition, Telocator proposes that existing §99.234(a) could be clarified by specifying the

resolution bandwidth over which the measurement is to be made and by formally defining the units of the term P.¹⁴ The proposed revision would read as follows:

§99.234 Emission Limits.

- (a) On any frequency outside the frequency block(s) licensed to the licensee, the power of any emission shall be attenuated below the transmitted power (P, measured in Watts) by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation.

NOTE 1: The measurement of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

NOTE 2: Compliance with the emission limits is based on the use of measurement instrumentation with a resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

- (b) [unchanged]

III. REGULATIONS FOR PCS-MICROWAVE FREQUENCY COORDINATION SHOULD PROVIDE GREATER FLEXIBILITY TO ACCOMMODATE FURTHER INDUSTRY DEVELOPMENTS.

The FCC's rules governing coordination of new PCS systems are wisely based in large part on EIA/TIA's Bulletin TSB10-E. Indeed, the FCC is to be commended for its ongoing participation in the TR14.11 meetings on this subject and its incorporation of a number of TIA agreements into the rules despite that Bulletin 10-F is still in a draft form. Utilizing the consensus positions of an accredited industry standards group to deal with the technical issues involved in PCS-microwave frequency coordination is consistent with the positions advocated by both microwave users and PCS entrants alike. However, incorporating draft revisions to TSB10-E into the regulatory framework for PCS-microwave

¹⁴ The proposed clarification on resolution bandwidth is taken from Section 15.321(d) also adopted in the *Second PCS R&O*.

interference ignores ongoing discussions still occurring in TIA and may unnecessarily constrain TIA's ability to flexibly implement additional consensus solutions to PCS-microwave engineering problems. Telocator therefore requests Commission reconsideration of a few issues in order to ensure TIA's ability to achieve the twin objectives of avoiding interference while promoting rapid deployment of PCS.

Future Revisions of TSB10. As the FCC's *Second PCS R&O* recognizes, a revised version of TSB10-E is in the process of being implemented. And, while the *Second PCS R&O* notes that the FCC "would accept the new TSB10-F, when adopted by EIA/TIA, for use demonstrating compliance with [the] technical standards,"¹⁵ the *Second PCS R&O* in many other places only makes reference to TSB10-E.¹⁶ In order to avoid having to reform the rules as TSB10 gets updated to version 10-F and beyond, the FCC should clarify that the appropriate reference is the latest revision of TSB10, regardless of the version letter.

Propagation model. Although the rules are silent on the issue of the propagation model to be used in calculating PCS-microwave interference, the *Second PCS R&O* itself states that "[p]ath loss in general . . . will be based on the Longley/Rice propagation model."¹⁷ While the Longley/Rice propagation model is appropriate in many circumstances, Telocator notes that mandating use of the Longley/Rice model is inconsistent with current TIA discussions. On balance, Telocator believes the best policy would be to default to the

¹⁵ Order at ¶ 150 n.116.

¹⁶ See, e.g., ¶¶ 143, 145, 146 & 147. See also 47 C.F.R. § 99.233(h) (Indeed, this section specifies reliance on TSB10 C/I criteria for PCS-to-microwave interference which will only be implemented in version 10-F and beyond).

¹⁷ Order, ¶ 172.

Longley/Rice model only in the event that TIA members cannot achieve consensus agreement on the use of other models in the process to revise TSB10.

For example, Telocator notes that the specific stated criticisms of the "Hata model" may no longer be applicable since the current TIA-accepted "Hata model" includes a number of modifications that overcome the identified shortcomings. Thus, even though the Hata model requires an adjustment to compensate for minor problems in differentiating between urban and suburban environments, the modified Hata model appears no less accurate than the Longley/Rice model, which requires an environment "correction factor" of 10-35 dB.¹⁸ Telocator believes that the Hata model, as modified, is also appropriate for coordinator use within the applicant's boundaries.

Propagation Calculations. As discussed above, the FCC has commendably attempted the difficult task of blending draft TIA propagation assumptions with the basic Longley/Rice propagation model in Appendix D to the Commission's Order. Again, however, codification of the draft TIA assumptions may thwart ongoing TIA processes because TIA is in the process of developing recommendations on the precise issues the FCC has decided.¹⁹ Because TIA's efforts involve a much more detailed technical assessment of potential interference, TIA's resolution of the issues may be somewhat different than mandated in the order. Telocator believes that such efforts should nonetheless be recognized and parties should be permitted to utilize the assumptions adopted by consensus in TSB10-F.

To illustrate the relative level of detail, the *Second PCS R&O* states "that until more experience is gained we should take a conservative approach and assume that all PCS

¹⁸ Footnote 125 and Appendix D.

¹⁹ See TR14.11/93.11.1-61. See also TIA TR14.11/93.11.03-56 for a comparison of Longley/Rice to T.I.A.'s modified Hata/CCIR model.

channels are active for interference purposes."²⁰ TIA's approach to this question in the TSB10-F draft is basically similar, but the TIA draft also provides additional definitional details necessary to apply the statement in cases--like CDMA systems--where the meaning of "all channels" may not be immediately evident.²¹ Similarly, TIA's TSB10-F draft recognizes that in coordination situations involving large numbers of base stations with portable units contending for channels, trunking theory dictates that less than 100 percent of the channels will be used.²² Because TIA's efforts are consistent with the FCC's basic approach, but include contextual detail that would assist in resolving similar coordination problems in a consistent manner, Telocator urges the Commission to consider modifying the coordination assumptions in the rules to place greater reliance on TSB10 and TIA consensus positions.

IV. THE COMMISSION SHOULD CLARIFY APPLICATION FILING PROCEDURES.

Telocator commends the FCC for attempting, to the degree possible, to minimize the paperwork burden imposed on both its staff and on applicants. In particular, the Commission's rules state that "[b]lanket licenses are granted for each market and frequency block," and that "[a]pplications for individual sites are not needed and will not be accepted."²³ While Telocator supports eliminating unnecessary paperwork, it believes this

²⁰ Order at ¶ 173.

²¹ CDMA systems typically have theoretically large numbers of "channels" (codes) while only using a small subset.

²² Since the quality of service (e.g. blocking and delays) decreases rapidly as channel demand increases toward 100%. T.I.A. is currently recommending 50% for this condition.

²³ 47 C.F.R. § 99.11.

rule should be reconsidered in light of proposals in the FCC's recent *Notice of Proposed Rulemaking* on competitive bidding procedures. Specifically, the *Auction NPRM* proposes to impose Sections 22.3 through 22.45 of the Public Land Mobile Service rules and Sections 22.917(f) and 22.918 through 22.945 of the Public Cellular Radio Telecommunications Service rules on PCS filings, which do collectively mandate individual site informational filings.²⁴

While the prospect of adapting the cellular rules for PCS has considerable allure in terms of simplicity, the operational requirements of PCS systems will be very different from cellular systems and failing to consider these differences may ultimately result in wasteful expenditure of resources by both applicants and the Commission. For example, Telocator believes, on balance, that some information about constructed stations must be made available to analyze and resolve interference problems that may arise between systems that are adjacent in either space or frequency. Given the large number of stations anticipated, however, applying the cellular filing rules would be extremely burdensome. In addition, as Telocator has noted in its auction comments,²⁵ requiring the submission of engineering material prior to construction would be burdensome and of limited utility. For this reason, Telocator believes the Commission should consider streamlining application processing and information retrieval by authorizing electronic filing of PCS applications.

Electronic filing of individual site information for PCS is a particularly appropriate use of information age technology to streamline government. Under such a scheme, the Commission, or a designated contractor, would receive PCS filings electronically for a small

²⁴ Auction NPRM at ¶ 128.

²⁵ Comments of Telocator at 12-14, PP Docket No. 92-253 (filed November 10, 1993).