

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 20554**

In the Matter of)	
)	
Revisions of Parts 2 and 15 of the)	ET Docket No. 03-122
Commission's Rules to Permit Unlicensed)	RM - 10371
National Information Infrastructure (U-NII))	
Devices in the 5 GHz Band)	
)	

To: The Federal Communications Commission

**COMMENTS
OF THE
AMERICAN PETROLEUM INSTITUTE**

The American Petroleum Institute ("API"), by its attorneys, is pleased to submit these Comments to the Federal Communications Commission ("FCC" or "Commission") in response to the Notice of Proposed Rulemaking ("NPRM") released in the above-captioned proceeding on June 4, 2003.¹ The NPRM looks toward the amendment of the Commission's rules to permit the use of an additional 255 megahertz of spectrum in the 5.470-5.725 GHz ("5 GHz") band for unlicensed National Information Infrastructure ("U-NII") devices operating under Part 15.

I. PRELIMINARY STATEMENT

1. API is a national trade association representing approximately 400 companies involved in all phases of the petroleum and natural gas industries, including the exploration, production, refining, marketing and transportation of petroleum, petroleum products and natural gas. The API Telecommunications Committee is one of the standing committees of the

¹ 68 Fed. Reg. 44011 (July 25, 2003).

organization's General Committee on Information Management & Technology. The Telecommunications Committee evaluates and develops responses to state and federal proposals affecting telecommunications facilities used in the petroleum and natural gas industries.

2. API's Telecommunications Committee is supported and sustained by companies that are authorized by the Commission to operate telecommunications systems in various of the licensed radio services. For instance, API's members utilize facilities in the Private Land Mobile Radio Services ("PLMRS"), licensed under Part 90 of the FCC's rules, to support the search for and production of oil and natural gas, to ensure the safe pipeline transmission of natural gas, crude oil and refined petroleum products, to process and refine these energy sources and to facilitate their ultimate delivery to industrial, commercial and residential customers. Many API member companies also utilize facilities authorized in the Private Operational-Fixed Microwave Services ("POFS") pursuant to Part 101 to serve a variety of vital telecommunications functions (e.g., communications with remote oil and gas exploration and production sites for voice and data applications, communications with refineries, the extension of circuits to remote pipeline pump and compressor stations, and supervisory control and data acquisition systems ("SCADA") that remotely monitor and control the operation of oil and gas wells, and pipelines). Additionally, some API member companies operate ship and private coast radio facilities (authorized under Part 80) and aviation radio facilities (governed by Part 87).

3. As a supplement to the aforementioned licensed radio systems, many API member companies operate unlicensed "spread spectrum" systems in the 902-928 MHz, 2.4 GHz and 5.8 GHz bands for both point-to-point and point-to-multipoint communications systems. These systems (like the licensed systems discussed above) are used for a variety of voice, as well as data, services for monitoring and control functions that help petroleum and natural gas

companies conduct their day-to-day operations in a safe and efficient manner.

4. The continued operation of the licensed and unlicensed private radio systems employed by petroleum and natural gas companies is absolutely essential to protecting lives, health and property, both in support of the day-to-day operations of these companies, as well as during responses to emergency incidents. These systems are integral to the provision of our nation's energy resources to the public. Due to the critical importance of such systems to the operations of its members, API has been an active participant in all of the Commission's major rule making proceedings that have addressed the use of spectrum in the private (licensed) radio services and the availability of spectrum for unlicensed applications such as spread spectrum devices.

II. COMMENTS

5. The Commission seeks comment in its NPRM on whether it should make additional spectrum in the 5 GHz band available for unlicensed operations (specifically, for use by U-NII devices). For the reasons discussed below, API urges the Commission to: (1) allow unlicensed spread spectrum operations in the 5.47-5.725 GHz band; (2) adopt and enforce adequate technical restrictions to prevent interference in the band; and (3) recognize that new unlicensed spectrum allocations will not eliminate the need for future allocations for licensed systems.

A. **With Adequate Safeguards, API Supports the Proposed Expansion of Unlicensed Operations into the 5.47-5.725 GHz Band**

6. As discussed above, many API member companies operate spread spectrum unlicensed devices in the 902-928 MHz, 2.4 GHz and 5.8 GHz bands. Current provisions in the

Commission's Part 15 rules that allow a substantial amount of power to be transmitted without a license using spread spectrum techniques have proven to be extremely successful. These provisions have paved the way for the development of a wide range of wireless products, many of which are being used by petroleum and natural gas companies to enhance the safety and efficiency of their operations.

7. The aforementioned spread spectrum bands have been so successful that congestion, not equipment design, now often limits applications in these frequency bands. API member companies recently reported having encountered interference to their spread spectrum operations during the past several years. The following are just a few examples:

- One company has removed from service an unlicensed system in the 902-928 MHz band that was deployed along the Houston Ship Channel because it was receiving interference from a licensed LoJack vehicle tracking system. The company also was required, due to interference, to remove a 5.8 GHz path between downtown Houston and Bush Intercontinental Airport and replace it with a licensed 6 GHz system. Because the latter link is used to track helicopters in the Gulf of Mexico, as well as other important safety-related voice traffic, interference simply could not be tolerated.
- Several companies report increasing incidents of interference from wireless ISPs. As a result of such interference, one company is in the process of attempting to have two communications links converted from unlicensed to licensed facilities.
- One natural gas pipeline company has experienced substantial interference to its spread spectrum operations in the 902-928 MHz and 2.4 GHz bands. The company has been able to continue operating by using isolation techniques such as antenna polarization, pattern switching and slot blocking.
- A petroleum company reports that it has had to replace its 902-928 MHz spread spectrum with 2.4 GHz spread spectrum due to interference and also has had to make system adjustments (such as the use of larger antennas or the relocation of antennas) to resolve interference problems.
- Another company states that it has had to abandon the implementation of spread spectrum systems in areas where interference became prevalent.

8. API believes that the simplicity of the original spread spectrum provisions turned out to be a "double edged sword." The simplicity was beneficial to the extent that it fostered the

relatively quick development of a wide variety of applications. The down side was that the absence of detailed technical standards and enforcement of the rules likely has contributed to the interference problems that exist today in the unlicensed bands. Perhaps these problems could have been averted or at least minimized if more immunity to inter-system interference had been engineered into the system designs, either in terms of equipment-to-equipment dynamic coordination or the grouping of generally compatible types of equipment together in different parts of the band. In any event, due to the types of congestion and interference problems described above, many API member companies would welcome the opportunity to employ unlicensed spread spectrum devices in additional frequency bands. Indeed, several member companies have reported that they would consider implementing a number of new spread spectrum links in the near or immediate future if additional spectrum were to be made available for the operation of such devices.

9. In view of the foregoing, API responded affirmatively to the Commission's recent inquiry as to whether it should consider allowing unlicensed operations in the 3650 MHz band.² In that proceeding, API stated in its Comments that the suggested spectrum at 3650 MHz is ideally suited for new unlicensed operations because it is low enough in the spectrum range to perform well in heavy rain fade areas and high enough that antenna directivity easily can be deployed to help reduce inter-system interference. API also agreed with the Commission that the 3650 MHz band is a good candidate for new unlicensed operations because it is not heavily used in most parts of the country.

10. Likewise, API believes that the 5 GHz band is appropriate for expanded

² See In the Matter of Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band, ET Docket No. 02-380, *Notice of Inquiry* ("NOI") (rel. Dec. 20, 2002).

unlicensed operations. The 5 GHz band spectrum at issue in this proceeding is immediately adjacent to the 5.8 GHz band spectrum used by API member companies and others for spread spectrum operations (*i.e.*, 5725-5825 MHz). Thus, the new 5 GHz spectrum would be technically suitable for the types of functions that these spread spectrum devices presently serve and therefore could ease the congestion that presently is being experienced in the existing 5.8 GHz spread spectrum band. Further, spread spectrum operations would be compatible with the “Wi-Fi” type operations envisioned by the Commission for the expanded unlicensed allocation in the 5 GHz band. In particular, these two types of unlicensed operations can be expected to co-exist well because Wi-Fi operations are most likely to proliferate in cities and densely populated areas, while spread spectrum operations (of the nature employed by the oil and natural gas industries) are typically implemented in rural and industrial areas. Moreover, given the power restrictions contemplated by the Commission, interference between unlicensed operations is highly unlikely. Thus, any expanded unlicensed allocation in the 5 GHz band should be defined broadly enough to permit the use of spread spectrum devices.

11. API supports the Commission’s proposed technical safeguards (*e.g.*, the requirement to employ dynamic frequency selection and transmit power control mechanisms) to prevent interference to licensed, primary operations in the 5 GHz band.³ While, as noted above, API generally supports the Commission’s proposal to expand unlicensed operations in the 5 GHz band, API also believes that adequate measures must be taken to minimize the likelihood of interference both to licensed operations and between and among unlicensed devices. API member companies frequently have found that, in a “hybrid” band in which both licensed and unlicensed operations are permitted, some users may operate with more power and antenna

³ See *NPRM* at ¶¶ 16-24.

height than permitted, thereby raising the “noise floor,” causing interference, and generally reducing the usefulness of the band to all parties. API is optimistic that the “intrinsic” or dynamic-type mechanisms being proposed by the Commission (presumably in light of advances in technology) will be more effective in avoiding interference than the manual types of controls that previously have been employed. To be most effective, however, any such technical restrictions that are adopted with regard to the new unlicensed allocation in the 5 GHz band must be tested in advance to determine their adequacy and should be strictly enforced by the Commission; otherwise, the type of “free for all” environment that has at times evolved in other “hybrid” bands could result here as well.

B. New Unlicensed Applications and Devices Will Not Eliminate the Need for Licensed Operations and New Licensed Allocations

12. While, as noted above, API would welcome the amendment of the Commission’s rules to permit new unlicensed operations in the 5 GHz band, API also cautions the Commission that expanded unlicensed operations will not be a panacea to the spectrum congestion and availability problems that the agency presently faces. Although unlicensed operations serve some useful functions, they will not and should not be expected to replace licensed operations and the need for new spectrum allocations for licensed applications.

13. One example that API already has discussed in detail in Comments recently filed in other proceedings is the need of its member companies for licensed Internet Protocol (“IP”)-based telecommunications systems to improve and modernize their SCADA and remote data access systems.⁴ Experience has shown that, when unlicensed devices are used for this purpose,

⁴ See Comments of API in response to the NOI in ET Docket No. 02-380 (filed April 17, 2003); Joint Comments of API and UTC in ET Docket No. 02-364 (filed July 7, 2003) (In the Matter of Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems In the 1.6/2.4 GHz Bands).

the potential for interference is substantial, and the actual distance that can be covered is often far less than what the equipment specifications suggest could be accomplished without interference. While API recognizes that the creation of a new coordinated allocation is outside the scope of this proceeding, it urges the Commission to consider concerns such as those described above as it decides how best to meet the wide variety of private, public safety and commercial communications needs that are presented to it and to recognize that many safety-related and other important communications needs will continue to require licensed spectrum allocations.

III. CONCLUSION

14. API appreciates the Commission's interest in identifying new spectrum for unlicensed operations, as it believes that existing unlicensed spectrum bands are highly congested and that permitting new unlicensed operations in other bands would enable companies to satisfy unmet needs and would foster the development of new unlicensed applications and equipment. At the same time, API urges the Commission to adopt and strictly enforce technical safeguards to minimize the likelihood of interference to licensed operations, and between and among unlicensed devices. API also urges the Commission to recognize that, notwithstanding the usefulness of unlicensed devices, licensed/coordinated spectrum allocations will continue to be needed for a variety of applications.

WHEREFORE, THE PREMISES CONSIDERED, the American Petroleum Institute respectfully submits the foregoing Comments and urges the Federal Communications Commission to act in a manner consistent with the views expressed herein.

Respectfully submitted,

**THE AMERICAN PETROLEUM
INSTITUTE**

By: /s/ Wayne V. Black

Wayne V. Black
Nicole B. Donath
Keller and Heckman LLP
1001 G Street, Suite 500 West
Washington, D.C. 20001
(202) 434-4100

Its Attorneys

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