Advice Letter 53

Modification began May 9, 1991. The effective date of the resolution authorizing construction was May 13, 1991.

Advice Letter 54

Modification began April 5, 1991, and the advice letter was filed April 12, 1991. Service began May 7, 1991. The effective date of the resolution authorizing construction was May 13, 1991. FCC Form 489 was not mailed until May 10, 1991, which can be a violation of FCC regulations.

Advice Letter 55

Modification began April 19, 1991. The effective date of the resolution authorizing construction was May 13, 1991. Service began May 12, 1991. The final site inspection did not take place until May 24, 1991, which can be a violation of the Uniform Building Code.

Advice Letter 56

Modification began May 2, 1991, and the advice letter was filed May 6, 1991. Service began May 31, 1991. The effective date of the resolution authorizing construction was June 6, 1991. FCC Form 489 was not mailed until February 25, 1992, which can be a violation of FCC regulations.

Advice Letter 57

Modification began May 6, 1991. Service began June 6, 1991. The effective date of the resolution authorizing construction was June 6, 1991. FCC Form 489 was not mailed until February 25, 1992, which can be a violation of FCC regulations. The final site inspection did not take place until December 4, 1991, which can be a violation of the Uniform Building Code.

Advice Letter 59

Service began July 23, 1991. The final site inspection did not take place until January 22, 1992, which can be a violation of the Uniform Building Code.

Advice Letter 61

Service began July 30, 1991. The final site inspection did not take place until January 24, 1992, which can be a violation of the Uniform Building Code.

Advice Letter 63

Modification began August 5, 1991, and the advice letter was filed August 6, 1991. Service began August 30, 1991. The effective date of the resolution authorizing construction was September 9, 1991. FCC Form 489 was not mailed until September 17, 1991, which can be a violation of FCC regulations. The final site inspection did not take place until October 8, 1991, which can be a violation of the Uniform Building Code.

Advice Letter 65

Modification began August 19, 1991, and the advice letter was filed August 21, 1991. The effective date of the resolution authorizing construction was September 23, 1991. Service began October 2, 1991. The final site inspection did not take place until January 24, 1992, which can be a violation of the Uniform Building Code.

Advice Letter 66

Modification began August 7, 1991, and the advice letter was filed August 23, 1991. Service began September 18, 1991. The effective date of the resolution authorizing construction was September 23, 1991. The final site inspection did not take place until December 12, 1991, which can be a violation of the Uniform Building Code.

Advice Letter 67

Modification began September 11, 1991. Service began October 8, 1991. The effective date of the resolution authorizing construction was October 10, 1991. FCC Form 489 was not mailed until October 10, 1991, which can be a violation of FCC regulations.

Advice Letter 69

Modification began September 12, 1991, and the advice letter was filed September 25, 1991. Service began October 4, 1991. The effective date of the resolution authorizing construction was November 25, 1991. Modification began prior to the issuance of the first building permit on September 16, 1991. FCC Form 489 was not mailed until October 10, 1991, which can be a violation of FCC regulations.

Advice Letter 70

Modification began November 11, 1991. The effective date of the resolution authorizing construction was December 19, 1991.

Advice Letter 72

Modification began November 25, 1991. The effective date of the resolution authorizing construction was December 26, 1991.

Advice Letter 73

Modification began November 25, 1991. The effective date of the resolution authorizing construction was December 26, 1991.

Advice Letter 74

Modification began November 4, 1991. The advice letter was filed December 9, 1991. Service began December 28, 1991. The effective date of the resolution authorizing construction was January 9, 1992.

CAGAL CELLULAR COMMUNICATIONS CORPORATION

Advice Letter 30

Modification began November 18, 1991. Service began December 9, 1991. The effective date of the resolution authorizing construction was December 16, 1991. FCC Form 489 was not mailed until December 26, 1991, which can be a violation of FCC regulations.

Advice Letter 32

Modification began November 30, 1991. Service began December 16, 1991. The effective date of the resolution authorizing construction was December 27, 1991.

BAY AREA CELLULAR TELEPHONE COMPANY (BACTC)

In a meeting on November 5, 1991, attended by Rachelle Chong and Martin Mattes of Graham and James, Brian Montgomery and Adam Anderson of BACTC, and Commission staff, BACTC agreed to immediately cease all construction activities at sites described in advice letters nos. 108, 109, 110, 111, 113, and 115.

Upon investigation by CPUC staff Wade McCartney and Kent Wheatland on November 12, 1991, it was obvious that construction was ongoing at both the Sunnyvale and Los Gatos sites (A.L. Nos. 113, 111). In a November 27, 1991, letter from Adam Anderson to Paul Clanon, it was stated that "Pursuant to your informal approval, BACTC did undertake minor construction to secure the North Sunnyvale site, which was exposed to the elements." Yet, in direct contradiction to their November 5, 1991, agreement, construction observed

pertained to interior work having no risk of exposure to the elements.

Additionally, BACTC was operating the Los Gatos site on October 31, 1991 with cellular enhancer equipment despite the fact that the site had not undergone final inspection and approval from the local building department.

With respect to advice letter no. 115 (North Alameda) BACTC went ahead and built and operated the site at the Alameda Naval Air Station (Federal property) without a required license agreement. BACTC claimed that a letter written to the executive officer, Commander Steve Frederick, was adequate. This letter stated in part that "BACTC is currently working with NAS Alameda facilities CACDA to coordinate construction activities....I have included a counter signature line in this letter. As a matter of record for BACTC's files, please sign and return this letter at your earliest convenience." BACTC felt that the Commanders' signature on this letter was sufficient permission to begin construction despite the requirements of federal law. (40 U.S.C. § 303b, 10 U.S.C. § 2665.)

With respect to advice letter no. 110 (Grizzly peak), when applying for the conditional use permit from Contra Costa County, BACTC submitted a letter of June 14, 1988, written by Bruno Davis the Director of CACD, as part of their application. The letter states, "The CPUC does not believe that it is necessary for applicants to obtain conditional use permits." This policy had been clearly superseded by G.O. 159 by March 28, 1990, and is in direct contradiction to the requirements of G.O. 159. BACTC submitted this outdated letter to Contra Costa County on April 17, 1991.

BACTC APPENDIX A

Advice Letter 39

Modification began 32 days prior to the effective date of the CPUC resolution authorizing construction. The site was in Service 26 days prior to receiving the City of Santa Clara Building Department's final inspection which can be a violation of the Uniform Building Code.

Advice Letter 41

The requested information was not provided.

Advice Letter 42

Modification began 57 days prior to the effective date of the CPUC resolution authorizing construction. The site was in service 43 days prior to receiving the final inspection, which can be a violation of the Uniform Building Code.

Advice Letter 44

BACTC stated that the site has been in service since July 30, 1990. Modification occurred 19 days prior to the effective date of the CPUC resolution authorizing construction.

This site was built at Abraham Lincoln High School in San Francisco. Office of the State Architect (OSA) approval is required unless certain conditions are met. (See discussion regarding OSA approval for LACTC above.) BACTC submitted plans to OSA for approval. Plan approval was obtained July 26, 1991, more than a year after the modification began on June 18, 1990, and nearly one year after the site went into service. This can be a felony violation of California's Education Code. As stated in the letter from OSA, approval of construction plans is required prior to "letting any contract for construction". BACTC stated that the "final inspection permit has been delayed due to changes made during construction that had to be submitted to OSA for approval". BACTC has not submitted any evidence of final site inspection. Failure to obtain final site inspection can be a violation of the Uniform Building Code. BACTC has not submitted any evidence of OSA approval of modifications. CACDA is uninformed about the nature of the modifications, and whether they required a second advice letter filing under G.O. 159's provisions regarding modifications.

Advice Letter 46

Modification began 30 days prior to the effective date of the CPUC resolution authorizing the construction site.

Advice Letter 47

Modification began 31 days prior to the effective date of the CPUC resolution authorizing construction. The site went into service nine days prior to CPUC resolution authorizing construction. The site was in operation 28 days prior to obtaining the final inspection, which can be a violation of the Uniform Building Code.

Advice Letter 48

The Advice Letter was filed on July 16, 1990. BACTC stated July 14, 1990, was the date the site was first modified. The inspection record submitted shows that an inspection took place on July 12, 1990. This record states, "contractor has framed in a new ceiling and a new wall." Construction occurred prior to filing the Advice Letter and prior to the date stated by BACTC in its Appendix A filing.

Advice Letter 50

Modification began 23 days prior to the effective date of the CPUC resolution authorizing construction. The site was operating 9 days prior to authorization. The site was in operation 22 days prior to filing the Federal Communications Commission Form 489, which is to be filed prior to or on the day that operation begins. It appears that the final inspection did not occur until July of 1991, which can be a violation of the Uniform Building Code.

Advice Letter 51

Modification began 30 days prior to the effective date of the CPUC resolution authorizing construction. The site was operating for more than three months before obtaining the final inspection, which can be a violation of the Uniform Building Code.

Advice Letter 53

Modification began 29 days prior to the effective date of the CPUC resolution authorizing construction. The site went into operation on September 29, 1990, and has yet to obtain a final site inspection. This can be a violation of the Uniform Building Code. BACTC stated that it "submitted a letter dated February 14, 1991, for variance to the San Francisco Electrical Department. Awaiting response to that letter." No evidence was submitted showing that BACTC obtained Electrical Department approval.

Advice Letter 55

Modification began one day before to the Advice Letter was filed and 31 days before the effective date of the CPUC resolution authorizing construction. The site was in operation 9 days prior to the CPUC resolution authorizing construction. The Redwood City conditional use permit authorizes a tower that may not exceed 75 feet. The Appendix A information states that the site consists of a 75 foot tower. The Federal Communications Commission Form 489 and the Federal Aviation Administration Form 7460 state that the tower is 100 feet tall. The site went into service on October 4, 1990. No evidence of a final site inspection was submitted to obtain final site inspection can be a violation of the Uniform Building Code. BACTC stated "A revised letter has been sent to the Redwood City's Fire Department for approval of the monitoring of the cell site's halon system." BACTC has not submitted any evidence of Fire Department approval.

Advice Letter 56

Modification began 72 days prior to the effective date of the CPUC resolution authorizing construction. The site was in service 14 days prior to the final site inspection, which can be a violation

of the Uniform Building Code. The site was in operation 44 days prior to the resolution authorizing the site.

Advice Letter 57

Modification began 75 days prior to the effective date of the CPUC resolution authorizing construction. The site was in service 48 days prior to the resolution authorizing construction. The site was in operation 9 months before the final site inspection, which can be a violation of the Uniform Building Code.

Advice Letter 59

Modification began 69 days prior to the effective date of the CPUC resolution authorizing construction. The site was in operation 55 days prior to the CPUC resolution authorizing construction. The site was in operation for 50 days prior to the final site inspection, which can be a violation of the Uniform Building Code.

Advice Letter 60

Modification began 1 day prior to filing the Advice Letter and 31 days prior to the effective date of the CPUC resolution authorizing construction. The site was in service 15 days prior to the effective date of the resolution. The site was in operation 86 days prior to the final site inspection, which can be a violation of the Uniform Building Code.

Advice Letter 61

Modification began 7 days prior to filing the Advice Letter and 38 days prior to the effective date of the CPUC resolution authorizing construction. The site was in service 1 day prior to the effective date of the resolution.

Advice Letter 62

Modification began 1 day prior to filing the Advice Letter and 32 days prior to the effective date of the CPUC resolution authorizing construction. The site was in service 8 months prior to receiving the final site inspection, which can be a violation of the Uniform Building Code.

Advice Letter 63

Modification began 2 days prior to filing the Advice Letter and 33 days prior to the effective date of the CPUC resolution authorizing construction. The site was in service 8 months prior to receiving the final site inspection, which can be a violation of the Uniform Building Code.

Advice Letter 64

Modification began 31 days prior to the effective date of the CPUC resolution authorizing construction. The site was in service 14 days prior to receiving the final site inspection.

Advice Letter 65

Modification began 10 days prior to filing the Advice Letter and 40 days prior to the effective date of the CPUC resolution authorizing construction. The site was in service 6 days prior to the effective date of the resolution. The site was in service at least 7 months prior to receiving the final site inspection, which can be a violation of the Uniform Building Code.

Advice Letter 66

The site was in service five months prior to receiving the final site inspection, which can be a violation of the Uniform Building Code.

Advice Letter 67

Modification began 27 days prior to the effective date of the CPUC resolution authorizing construction.

Advice Letter 68

Modification began 26 days prior to the effective date of the CPUC resolution authorizing construction. The site was in service 17 days prior to receiving the final site inspection, which can be a violation of the Uniform Building Code.

Advice Letter 72

Modification began 31 days prior to filing the Advice Letter and 62 days prior to the effective date of the CPUC resolution authorizing construction.

Advice Letter 73

Modification began 34 days prior to the effective date of the CPUC resolution authorizing construction. Service began 10 days prior to the effective date of the resolution. Service began 2 months prior to receiving the final site inspection, which can be a violation of the Uniform Building Code. BACTC stated that modification began on December 19, 1990. The inspection record indicates that the framing was signed off on December 7, 1990.

Advice Letter 74

Modification began 41 days prior to filing the advice letter and 72 days prior to the effective date of the CPUC resolution authorizing construction. Service began 8 days prior to filing the Advice Letter and 39 days prior to the effective date of the resolution. The site operated for 3 months prior to the final inspection, which can be a violation of the Uniform Building Code.

Advice Letter 75

Modification began 31 days prior to the effective date of the CPUC resolution authorizing construction. Service began February 21, 1991. BACTC stated it had not obtained final site inspection. Failure to obtain final inspection can be a violation of the Uniform Building Code.

Advice Letter 77

Modification began 9 days prior to filing the advice letter and 40 days prior to the effective date of the resolution authorizing construction. Service began February 28, 1991. BACTC stated it had not obtained final site inspection was submitted. Failure to obtain final inspection can be a violation of the Uniform Building Code.

Advice Letter 79

Modification began 28 days prior to the effective date of the resolution authorizing construction. Service began April 4, 1991. The final inspection occurred July 2, 1991, which can be a violation of the Uniform Building Code.

Advice Letter 81

Modification began 6 days prior to filing the advice letter and 34 days prior to the effective date of the resolution authorizing construction. Service began 2 days prior to the effective date of the resolution.

Advice Letter 82

Modification began 3 days prior to filing the advice letter and 34 days prior to the effective date of the resolution authorizing construction. Service began April 22, 1991. BACTC stated it had not obtained final site inspection. Failure to obtain final inspection can be a violation of the Uniform Building Code.

Advice Letter 83

Modification began 27 days prior to the effective date of the resolution authorizing construction.

Advice Letter 84

Modification began 31 days prior to the effective date of the resolution authorizing construction. This site was built at Alamada Hospital, and went into service on May 20, 1991. BACTC stated that, "The final building permit is being delayed due to changes that had to be made during construction." BACTC did not submit any evidence of Office of Statewide Health Planning and Development (OSHPD) approval. Operation without final OSHPD approval can be a violation of the California Health and Safety Section 15000, et seq. (State law requires that certain construction plans be approved at such locations prior to the beginning of construction, and that the site receive final OSHPD approval before it is put into service.)

Advice Letter 85

BACTC stated in their advice letter filing that the date any modification began was March 29, 1991. The inspection record shows that the framing and wallboard were inspected and signed off on March 26, 1991. Modification began at 1 day prior to filing the advice letter, 3 days prior to the date stated in Appendix A, and at least 34 days prior to the effective date of the resolution authorizing the construction. Service began April 25, 1991, 4 days prior to the effective date of the resolution. The final site inspection did not occur until June 29, 1991, which can be a violation of the Uniform Building Code.

Advice Letter 86

Modification began 28 days prior to the effective date of the resolution authorizing construction. This site was built at Eden Hospital, and went into service on June 17, 1991. BACTC's Appendix A filing stated, "Due to an equipment design problem, the General Contractor is making modifications to the air handling units at this site... BACTC will obtain and submit a copy of the finalized inspection permit as soon as it is available." BACTC has not submitted evidence of final OSHPD approval. Failure to obtain such approval can be a violation of the California Health and Safety Code.

Advice Letter 87

Modification began 28 days prior to the effective date of the resolution authorizing construction.

Advice Letter 90

Modification began 30 days prior to the effective date of the resolution authorizing construction.

Advice Letter 91

Modification began 9 days prior to the advice letter filing and 27 days prior to the effective date of the resolution authorizing the construction. The site went into service June 3, 1991. The final inspection occurred July 16, 1991, 43 days after service began, a violation of the Uniform Building Code.

Advice Letter 93

Modification began 24 days prior to the advice letter filing and 55 days prior to the effective date of the resolution authorizing the construction. The site went into service July 10, 1991. The final inspection occurred September 20, 1991, 71 days after service began, a violation of the Uniform Building Code.

Advice Letter 94

Modification began 30 days prior to the effective date of the resolution authorizing the construction. The site went into service July 19, 1991. The final inspection occurred September 20, 1991, 62 days after service began, a violation of the Uniform Building Code.

Advice Letter 96

BACTC states in their appendix A filing that construction began June 10, 1991, yet the inspection record shows that the framing was inspected and signed off on June 7, 1991. Modification began at least 3 days prior to that stated by BACTC in its appendix A filing, at least 20 days prior to the advice letter filing and 52 days prior to the effective date of the resolution authorizing construction. The site sent into service on June 27, 1991, the same day the advice letter was filed. The final inspection occurred on October 10, 1991, 105 days after service began, a violation of the Uniform Building Code.

Advice Letter 97

BACTC states in their appendix A filing that construction began July 15, 1991, yet the inspection record shows that the framing was inspected and signed off on July 10, 1991. Modification began at least 5 days prior to that stated by BACTC in its appendix A filing, at least 8 days prior to the advice letter filing and 36 days prior to the effective date of the resolution authorizing construction. The site sent into service on August 20, 1991. The final inspection occurred on November 26, 1991, 98 days after service began, a violation of the Uniform Building Code.

Advice Letter 98

Modification began 4 days prior to filing the advice letter and 35 days prior to the effective date of the resolution authorizing construction. Service began August 29, 1991, and the site has yet to receive the final inspection, a violation of the Uniform Building Code.

Advice Letter 99

Modification began 31 days prior to the effective date of the resolution authorizing construction. Service began 4 days prior to the effective date of the resolution.

Advice Letter 100

Modification began 32 days prior to the effective date of the resolution authorizing construction.

Advice Letter 101

Modification began 5 days prior to the advice letter filing and 36 days prior to the effective date of the advice letter authorizing construction. Service began 2 days prior to the effective date of the resolution and 7 days prior to the filing of the FCC form 489. Service began September 11, 1991, yet the final inspection did not occur until January 30, 1992, 141 days after service began, a violation of the Uniform Building Code.

Advice Letter 105

Modification began 106 days prior to filing the advice letter and 136 days prior to the effective date of the resolution authorizing construction. Required approval from the Executive Director of the Port of Oakland was not obtained until August 15, 1991, 69 days after construction began and 44 days after the site went into service. Service began July 2, 1991, 107 days prior to the effective date of the resolution.

Advice Letter 106

Modification began 27 days prior to the effective date of the resolution authorizing construction. Service began October 14, 1991, 3 days prior to the effective date of the resolution. The final inspection occurred February 18, 1992, 127 days after the site began service, a violation of the Uniform Building Code.

Advice Letter 107

Modification began 30 days prior to the effective date of the resolution authorizing construction. Service began October 21, 1991, 4 days prior to the effective date of the resolution. The site has not received the final inspection. In the appendix A filing BACTC states "This final building permit is being delayed due to and alarm issue raise(d) by the City of san Francisco." Operation of the site without the final inspection is a violation of the Uniform Building Code.

Advice Letter 117

Service began December 17, 1991. The final inspection has not occurred, operation prior to the final inspection is a violation of the Uniform Building Code.

Advice Letter 118

Service began December 27, 1991. The final inspection has not occurred, operation prior to the final inspection is a violation of the Uniform Building Code.

Advice Letter 123

Service began December 18, 1991. The final inspection has not occurred, operation prior to the final inspection is a violation of the Uniform Building Code.

Advice Letter 125

Service began December 19, 1991, 7 days prior to the effective date of the resolution authorizing the site. The final inspection occurred February 4, 1992, operation prior to the final inspection is a violation of the Uniform Building Code.

Advice Letter 130

Service began January 8, 1992, 1 day prior to the effective date of the resolution authorizing the site. The final inspection has not occurred, operation prior to the final inspection is a violation of the Uniform Building Code.

US WEST CELLULAR OF CALIFORNIA, INC. (US West)

APPENDIX B

Advice Letter 70

Two microwave antennas were added to an existing cellular site. One was added in early 1987, prior to G.O. 159. The second was added

on December 20, 1991. No evidence indicates the County of San Diego authorized the site before 1991. The advice letter that was filed on December 24, 1991, stated, "The proposed construction comprises the addition of two parabolic reflector antennas...."

A memorandum dated September 26, 1991, from Mary May of Lettieri-McIntyre and Associates, Inc. (the firm representing US West in the permit acquisition process) to Anne Drabin of US West stated, "The filing fees for this modification would be $3,600. If the County assesses a penalty for construction prior to permit approval, the fees will be doubled. Our recommendation is to submit just the $3,600 up front and wait to see if the double fees are required." [emphasis added.] US West's application for the Major Use Permit refers to the "addition of two 4-foot link antennas." No evidence is provided indicating that the San Diego Planning Department or citizens (through public notice) knew that an antenna was already at the site without authorization. The Planning Departments' approval and fee were based upon the application submitted.

APPENDIX A

Advice Letter 64

US West filed this advice letter on October 25, 1991. The effective date of the resolution authorizing construction was November 11, 1991.

US West constructed and is operating a cellular site within one unit of an apartment complex located at 1627 Oceanfront Street, San Diego. In their advice letter US West described the proposed construction as follows:

> "The above mentioned cell site will be located on an existing building at 1627 Ocean front Street in San Diego, California. An antenna will be mounted on the roof of the existing building. Initially, this configuration will support eight panel antennas in the future."

US West has placed panel antennas on the side of the apartment complex.

An inspection permit for interior wall construction was first signed off on October 17, 1991. US West stated that modification began October 16, 1991. US West stated that on October 16th and 17th, 1991, it

> "Began initial interior modification to an existing one bedroom apartment. Initial modifications consisted of layout of materials and painting of interior windows. Carpet and tile were removed and ceiling scraped.

> Interior walls were framed and dry-walled. No advice letter filing was made prior to this date because this type of activity comes within the terms of G.O. 159 Section III (D) (1) definition of construction and no significant effect on the environment was caused."

Section III (D) (1) is for "Minor Maintenance and Repair Work" and reads:

> "For the purpose of the General Order, 'construction' does not include any maintenance, repair or replacement of existing facilities; any alteration of or addition to equipment within an existing structure, any installation of environmental equipment, any soil, geological or site survey investigation, any work to determine feasibility of the use of the particular site for the proposed facility; or any other like work where it can be seen with certainty that there is no possibility that the work in question may have a significant effect on the environment. The types of work described in the preceding sentence may be performed without further Commission authorization. The utility must still comply with local permitting requirements, if any." [emphasis added.]

The above section does not apply to new sites. "Like work" is not broad enough to include modification for a new facility, or exempt a utility from local permitting requirements, regardless of the significance of environmental effect.

A building permit was issued October 15, 1991. Subsequent to issuing the building permit and in response to citizens' complaints, the City of San Diego found that the Planning Department had made an error in approving the facility by administrative review. According to City of San Diego Regulation (Section 101.0510,C4,g), US West should have been required to obtain a Conditional Use Permit (CUP). Development that is subject to the CUP process is detailed in city regulations as follows:

> Major stationary facilities for the aerial transmission or relay of electromagnetic communications signals, including, but not limited to, radio or television transmission stations and broadcasting studios, microwave relay stations, paging broadcast facilities and cellular mobile telephone transmitting facilities."

On November 27, 1991, the City of San Diego posted a stop work order at the facility and on December 3, 1991, the City of San Diego informed US West that it must apply for a CUP. US West's attorneys advised the City of San Diego that if the City rescinded the stop work order, US West would apply for the CUP and "hold the city harmless from any claim to which US West may be entitled for

damages against the city for expenditure after December 3, 1991 in the event US West's CUP is denied." US West applied for a CUP on December 6, 1991. No CUP has been issued.

US West has not obtained a Coastal Development Permit for this site. City of San Diego has discretion to determine whether this permit is required.

OTHER APPENDIX A SITES

CACDA is not yet prepared to report on U.S. West's 24 other Appendix A filings.

BAKERSFIELD CELLULAR TELEPHONE COMPANY (BCTC)

APPENDIX B

Advice Letter 22 (Site 9)

The advice letter was filed November 19, 1991. BCTC stated that the first date any modification began was August 26, 1991. Inspection records show that on August 12, 1991, the grading inspection was signed off. In a letter of April 22, 1992, from CACD to David Simpson (representing BCTC), CACD requested an explanation of the discrepancy. In a letter of April 30, 1992, David Simpson responded that "Bakersfield inadvertently erred in its previous

statement that modification of this site began on August 26, 1991. In fact, modification began the same date that the grading inspection was signed, namely August 12, 1991." The contractor told CACDA that modification of the site occurred prior to August 8, 1991. The valuation stated on the building permit was $7,734. The proposal for site construction states the cost at $229,069. The County of Kern's building permit fees were based on the $7,734 valuation.

Advice Letter 21 (Site 10)

The advice letter was filed November 19, 1991. BCTC stated that the date of first modification was August 14, 1991. Service began January 20, 1992. The valuation stated on the building permit was $7,734. The proposal for site construction states the cost of $240,736. The County of Kern's building permit fees were based on the $7,734 valuation. The site did not receive the final site inspection until February 22, 1992, which can be a violation of the Uniform Building Code.

APPENDIX A

Advice Letter 12

Modification began July 16, 1990. The advice letter was filed September 7, 1990, and the effective date of the resolution authorizing construction was October 7, 1991. FCC Form 489 was mailed April 27, 1990. The site did not begin service until December 15, 1990, which can be a violation of FCC regulations. The site did not receive the final site inspection until August 20, 1991, which can be a violation of the Uniform Building Code.
Advice Letter 23

Modification began December 1, 1991. The advice letter was filed December 24, 1991. Service began January 14, 1992. The effective date of the resolution authorizing construction was January 24, 1992. BCTC stated that this site was an "existing AM/FM broadcast facility; no construction required". Cellular service cannot be provided from AM/FM broadcast facilities without additional antennas, which is defined as construction in G.O. 159 (D(A)(2)(a)).

FCC/Commissioner Andrew C. Barrett
FCC/Commissioner Rachelle B. Chong
FCC/Robert M. Pepper
FCC/Scott Blake Harris
FCC/Thomas S. Tycz
FCC/Robert James
FCC/Karen Brinkmann
FCC/Lauren J. Belvin
FCC/Rudolfo M. Baca
FCC/Lisa B. Smith
FCC/Jane Mago
FCC/Jill Luckett
FCC/James Casserly
FCC/David R. Siddall
FCC/Mary P. McManus
FCC/Donald H. Gips
FCC/Gregory Rosston
FCC/Amy Lesch
FCC/Jennifer Gilsenan
FCC/Donna L. Bethea
FCC/Michael J. Marcus
FCC/Susan E. Magnotti
FCC/Blair Levin
FCC/Regina Keeney
FCC/Gerald P. Vaughn
FCC/Lawrence Atlas

Suitability Analysis of Frequencies Above 40 GHz for LMDS and/or Commercial Satellite Communications Applications

Comments of the

National Aeronautics and

Space Administration

Table of Contents

1.0 Executive Summary 1

2.0 Commercial Satellite Communications Feasibility Above 40 GHz 2

2.1 DoD Rationale for 44 GHz Selection 2

2.2 Frequency Allocations and Rain Attenuation Considerations 4

3.0 LMDS System Feasibility Above 40 GHz 7

3.1 41 GHz Propagation Environment 7

3.1.1 Rain Effects 7

3.1.2 Gaseous Attenuation 12

3.1.3 Foliage Attenuation 12

3.1.4 Reflection and Diffraction 12

3.1.5 Propagation Environment Summary 13

3.2 41 GHz Equipment Parameters 13

3.2.1 RF Transmitters 13

3.2.2 Antennas 15

3.2.3 RF Receivers 15

3.2.4 Equipment Performance as it Affects Spectrum Efficiency 15

3.2.5 41 GHz Equipment Parameters Summary 16

4.0 Conclusion 16

Appendix A 18

Appendix B 24

1.0 Executive Summary

Comments submitted to the FCC by several parties in response to ET Docket 94-124, RM-8308 suggested the possible use of frequencies above 40 GHz for LMDS services in lieu of operation at 28 GHz. One party alternatively suggested that satellite uplink operations at 28 GHz should be redesignated to frequency bands above 40 GHz. The following comments of the National Aeronautics and Space Administration examine the feasibility and merit of these proposals.

With respect to satellite uplink operation, NASA investigated available frequency allocations, affects of rain attenuation and the Department of Defense rationale for use of 43.5-45.5 GHz on some military communications satellites. With respect to LMDS operations, NASA investigated the propagation environment at 40.5-42.5 GHz including rain effects, gaseous attenuation, foliage attenuation and reflection/diffraction properties. Cost and availability of frequency dependent hardware components of an LMDS system at 41 GHz were also assessed and contrasted with 28 GHz.

In summary:

- The DoD rationale for selecting 44 GHz was based solely on strategic factors with minimal regard to cost impact.
- The first global allocation for satellite uplink operations with comparable bandwidth to that available at 28 GHz is the band 47.2-50.2 GHz
- Satellite systems would suffer an additional 20-50 dB attenuation due to rain at 49 GHz versus 28 GHz.
- LMDS systems would suffer an additional 8 dB attenuation due to rain at 41 GHz versus 28 GHz.[1]
- Increased attenuation due to rain can be effectively compensated for in an LMDS system with minimal impact on system characteristics while maintaining the identical cell sizes as proposed for 28 GHz operation in all rain zones.
- Gaseous attenuation and attenuation due to foliage are no more of an impediment to LMDS operation at 41 GHz than at 28 GHz.

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[1] Proposed LMDS systems compensate for differences in attenuation across rain zones by varying their cell sizes, thereby varying the path length through the rain and keeping the attenuation at edge of cell constant across rain zones.

1.0 Executive Summary

Comments submitted to the FCC by several parties in response to ET Docket 94-124, RM-8308 suggested the possible use of frequencies above 40 GHz for LMDS services in lieu of operation at 28 GHz. One party alternatively suggested that satellite uplink operations at 28 GHz should be redesignated to frequency bands above 40 GHz. The following comments of the National Aeronautics and Space Administration examine the feasibility and merit of these proposals.

With respect to satellite uplink operation, NASA investigated available frequency allocations, affects of rain attenuation and the Department of Defense rationale for use of 43.5-45.5 GHz on some military communications satellites. With respect to LMDS operations, NASA investigated the propagation environment at 40.5-42.5 GHz including rain effects, gaseous attenuation, foliage attenuation and reflection/diffraction properties. Cost and availability of frequency dependent hardware components of an LMDS system at 41 GHz were also assessed and contrasted with 28 GHz.

In summary:

- The DoD rationale for selecting 44 GHz was based solely on strategic factors with minimal regard to cost impact.
- The first global allocation for satellite uplink operations with comparable bandwidth to that available at 28 GHz is the band 47.2-50.2 GHz
- Satellite systems would suffer an additional 20-50 dB attenuation due to rain at 49 GHz versus 28 GHz.
- LMDS systems would suffer an additional 8 dB attenuation due to rain at 41 GHz versus 28 GHz.[1]
- Increased attenuation due to rain can be effectively compensated for in an LMDS system with minimal impact on system characteristics while maintaining the identical cell sizes as proposed for 28 GHz operation in all rain zones.
- Gaseous attenuation and attenuation due to foliage are no more of an impediment to LMDS operation at 41 GHz than at 28 GHz.

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[1] Proposed LMDS systems compensate for differences in attenuation across rain zones by varying their cell sizes, thereby varying the path length through the rain and keeping the attenuation at edge of cell constant across rain zones.

communications satellites.[3] DISA stated that the decision to develop and utilize 44 GHz technology was strictly based upon strategic factors. Covertness of small dispersed users over land and water could only be accomplished at 44 GHz. Cold war threats possessed the technology to defeat anti jam systems at 30 GHz but not at 44 GHz. In addition, spectrum spreading techniques employed at 44 GHz take advantage of the 2 GHz of bandwidth available versus only 1 GHz had 30.0-31.0 GHz been chosen. The military was willing (and still is) to pay the price of operating at 44 GHz to gain the strategic benefits that it affords.

In order to achieve the strategic benefits available to the military user, the DoD chose to accept a number of penalties that would severely hinder commercial viability. The following table compares system parameters for 44 GHz military communications satellites and proposed Ka-band commercial systems currently filed with the FCC.

	Military Systems	Spaceway	Teledesic
Uplink Freq. (GHz)	43.5 - 45.5	29.0 - 30.0	28.6 - 29.0
Data Rate	75 bps - 1.5 Mbps	384 kbps - 1.544 Mbps	16 Kbps - 2.048 Mbps
Antenna Diameter	60 cm - 2.4 m	66 cm - 2 m	16 cm - 1.8 m
XMTC Power	10 - 100 W	.5 - 2W	0.1W - 4.7W
Spreading Gain	Yes	No	No
Orbit	GEO	GEO	LEO
Link Availability	>99%	99.1 - 99.97%	99.9%
E/T Diversity	Yes	No	No

Larger antenna diameters, higher transmitter powers, use of spread spectrum techniques and earth terminal diversity, needed to overcome hostile force jamming, simultaneously is available to overcome the increased attenuation at 44 GHz for military satellites. The trade off accepted by DoD is much higher ground terminal costs. Commercial communications satellite systems depend on very low cost ground terminals to enable affordable service to a ubiquitous user base. Military users can also accept lower availability and have the option to trade data rate for link availability. (Such would be possible for commercial users as well, but would result in a less desirable service).

In summary, the system characteristics which make 44 GHz technically feasible for military use are too costly to implement in commercial communications satellite systems.

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[3] DISA indicated their willingness to meet with the FCC in a classified briefing.

2.2 Frequency Allocations and Rain Attenuation Considerations

Satellite uplink operation is not permitted in the 40.5 - 42.5 GHz band, nationally or internationally. The band 42.5 - 43.5 GHz is allocated for FSS and could be used, but provides only 1 GHz compared to the 2.5 GHz that would be surrendered at 28 GHz. The next higher suitable allocation is 47.2 - 50.2 GHz. This provides the desired BW and is therefore the most reasonable candidate.

Rain analysis has been performed using the Crane rain model and is shown in Tables 2.2-1-2.2-3. As one would expect, rain attenuation increases with frequency. This is true for both satellites or LMDS operating above 40 GHz compared with 28 GHz. It is also true that attenuation increases with higher rain rate areas (again no surprise).

The important difference when assessing suitability of above 40 GHz for either service is that LMDS systems, by their terrestrial nature, can compensate for differences in attenuation across rain zones by varying their cell sizes (and thereby varying the path length through the rain). According to documentation presented by CellularVision during the NRMC,[4] their 28 GHz system proposal would vary the cell size in different parts of the country in order to achieve the desired availability in different rain climates. They have chosen to reduce the cell diameter to compensate for higher rain losses so that they can maintain the desired availability throughout the cell. The end result is that for LMDS, the total attenuation at the edge of the cell is constant for all rain zones. The same holds true at 41 GHz as it does at 28 GHz. This is shown in the Tables 2.2-1-2.2-3. There is an increase in attenuation in going to 41 GHz by about 8 dB to maintain the same 99.9% availability, but the total attenuation stays constant across differing rain zones when the same cell sizes are used at 41 GHz as proposed at 28 GHz. NASA comments submitted in response to the Above 40 GHz NMRM,[5] (and explained in greater depth in Section 3.1.1 of this document) show how the 8 dB can be accommodated through increased antenna gain with frequency and slight decrease in availability (99.84% vs. 99.9%).

Satellites on the other hand, whether LEO, MEO or GEO, must traverse the same path length through the atmosphere given a particular elevation angle. There is no means of varying path length, except through higher elevation (which limits the usable service arc). The increase in attenuation which result between differing rain zones must therefore be compensated for by hardware changes (i.e. increased transmitter power or antenna gain/diameter).

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[4] Document NRMC/60 Chart "Cellular Vision - The 'rain issue'"

[5] Comments of the National Aeronautics and Space Administration to ET Docket No. 94-124 RM-8308 page 5.

Tables 2.2-1-2.2-3 show that the magnitude of change between rain zones D2 and E for 47.2 - 50.2 GHz is in excess of 5 orders of magnitude (e.g. 39.99 dB attenuation in rain zone D2 at 30° elevation versus 96.28 dB attenuation in rain zone E). The hardware penalty on the satellite system is extreme requiring 100,000 times as much power.

Such extreme differences in attenuation would require major hardware differences to provide service in different parts of the country experiencing differing attenuation due to rain. This, coupled with the 20-40 dB increase in attenuation that results from operation at 49 GHz versus 29 renders the band 47.2-50.2 GHz unusable for commercial satellite communications services, given today's or currently foreseeable satellite technologies.

The 8 dB burden on LMDS implementation at 40.5-42.5 GHz is far less constraining than the 20-50 dB burden that would be faced by satellite uplink operation in the band 47.2-50.2 GHz.

Table 2.2-1: Crane Rain Analysis

New York, NY Rain Attenuation (dB)		Frequency			
		29 GHz	42 GHz	44.5 GHz	49.5 GHz
Elevation Angle	20.0°	28.20	46.91	50.08	55.98
	30.0°	20.26	35.37	35.82	39.99
	40.0°	15.77	26.16	27.92	31.18
	4.8 km LMDS Cell	13.1 dB	22.6 dB		

Earth Station Latitude = 40.8°
Height Above Sea Level = 0.0 km
Availability = 99.9 %
Polarization Tilt Angle = 0°