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November 22, 1996

BY HAND DELIVERY

Ms. Blanca S. Bayo, Director
Division of Records and Reporting
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Re: Docket No. 961230-TP

Dear Ms. Bayo:

Enclosed are the original and fifteen (15) copies of Sprint's Rebuttal Testimony and Exhibit of James D. Dunbar, Jr.

Please acknowledge receipt and filing of the above by stamping the duplicate copy of this letter and returning the same to this writer.

Thank you for your assistance in this matter.

Sincerely,

John P. Fons

cc: All Parties of Record

Enclosures

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CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished by U. S. Mail or hand delivery (*) this 22nd day of November, 1996, to the following:

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UNITED TELEPHONE COMPANY
OF FLORIDA
CENTRAL TELEPHONE COMPANY
OF FLORIDA
DOCKET NO. 961230-TP
FILED: November 22, 1996

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

REBUTTAL TESTIMONY

OF

JAMES D. DUNBAR, JR.

Q. Please state your name, address and present employment.

A. My name is James D. Dunbar, Jr. My business address is 4220 Shawnee Mission Parkway, Fairway, Kansas 66205. I am employed as Manager - Pricing and Regulatory with Sprint/United Management Company.

Q. Are you the same James D. Dunbar, Jr. who filed Direct and Supplement Direct Testimony in this proceeding?

A. Yes.

Q. What is the purpose of your rebuttal testimony?

A. I will point out a number of serious flaws in the Hatfield Model Version 2.2 Release 2 (HM2). In addition, I will show that the cost input values used in the model, which are purported to represent Sprint's Florida costs, make the results totally unusable for unbundled pricing in Sprint's Florida operating areas. I will also show

that using Florida-specific data the BCM 2 produces results which are only slightly different from what was previously filed by Sprint in this proceeding.

Q. Have you reviewed the HM2 and reached any conclusions on the effectiveness of the model?

A. Yes, I have reviewed the Direct and Supplemental Testimony of Don J. Wood on behalf of MCI and the exhibits which he represents are the HM2 and inputs. Although Sprint has requested the actual CD-ROM which contains the HM2, MCI has not furnished that information. Until I have had an opportunity to review the CD-ROM, this rebuttal testimony is preliminary, and I may need to supplement it. Nevertheless, in my review of what has been furnished to date, I have found a number of serious shortcomings in the network design and costs produced by HM2.

Q. Please state your findings.

A. There are a number of serious flaws that make HM2 unusable for pricing unbundled elements. First, the outside plant cost assumptions are inconsistent with loop plant design and the costs are understated. With the

wide variation in loop length, the single cable cost curve used in the HM2 is not consistent with the long loop design attempted by the model.

Second, the larger feeder and distribution cables used in the underground portion of the loops must be 26 gauge to fit in the single 4" duct placed by the model. To be most economical, the shortest loops should be comprised of 24 or 26 gauge copper. In turn, the longest loops used by the model must be 22 or 19 gauge. Each gauge change requires a different set of cable costs with 19 gauge being much more expensive per foot than the smaller gauges. Typical cost differences for 26 gauge versus 19 gauge cable are 40 to 50 percent.

Third, long loops also require the addition of load coils and line amplifiers to maintain any quality of signal and even simple dial tone. Loops over 18,000 must be loaded. Loading, however, prohibits the use of digital carrier or higher speed modems. Forward looking technology does not use long loop design but extends fiber and carrier systems well out along the loop. In forward looking design, the cooper beyond the carrier or serving area interface is provided with the more economical smaller gauge cables that are held within the 18,000 feet or

shorter (15,000 feet for 26 gauge) loop lengths that do not need the additional costs of loading, amplification or heavier gauges. The shorter lengths are not only less costly but ensure quality of signal transmission for the higher modem speeds such as the 28.8KB that is so common today for home and business computer access to bulletin boards and Internet services. Long loaded loops are not capable of modem speeds at quality beyond 9600 baud.

Fourth, the loop material costs used in the HM2 are far less than reasonable to cover the cost of cable, electronics, and loop treatment. The loop plant will not provide quality service, or in many cases, any level of dial tone to a customer at the end of the loop. A proxy model must have reasonable levels of cost that match the engineering assumptions used in that model. The HM2 does not achieve that match at all.

Q. You have discussed the cable and wire variances. Please describe your switch cost analysis.

A. Switching investment produced by the HM2 are understated by more than $125 to $130 per line across all size switches. Exhibit No. JDD-3 shows the switch investment curve produced by all of the switch complexes within

Florida. Current switch investments assume 59% of the processor is used for basic service. In addition, software costs for Centrex, custom calling features, ISDN, and CLASS features have been excluded from the switch investments. Further, all current software and hardware discounts are reflected. Switch engineering is held to 3.2%. In spite of these exclusions, the $125 to $130 per line increase over HM2 still is present.

Q. What are your findings with the digital carrier modeling?

A. The HM2 does not correctly calculate the number of fibers required to carry the Digital Loop Carrier to its correct maximum capacity. Neither does it correctly configure the carrier terminal equipment. It omits many of the costs necessary to make the terminals functional.

The smaller AFC carrier system used in HM2 is capable of multiple terminal locations on 4 fibers up to a total of 672 lines. The AFC carrier system will not go to 2016 lines as the HM2 calculates. This results in a significant understatement of the number of fibers used in the feeder and distribution plant. The HM2 also omits the costs for the AFC Local Exchange Terminal (LET) which includes the DS-1 and fiber optic transreceivers that

convert the TR 303 central office DS-1 connections to the proprietary optics used by the systems. The HM2 further omits the cost of the fiber optic termination frame required for the termination and distribution to the multiple carrier terminals of all the fiber cables.

Q. What have you found with regard to the distribution facilities?

A. The total length of distribution cable placed by the HM2 is insufficient to reach all subscribers. The HM2 assumes a square distribution area in its calculations and serves the area with a number of cables that are 5/8ths of the length of the side of the square (3/4ths if rock is present within 1 foot of the surface or soil is difficult). The HM2 uses two distribution cables for rural exchanges whose density is less than 5 subscribers per square mile. In the HM2 calculations, this results in very large areas being served by two cables that only go 5/8ths of a side. It is not possible for two cables that are 5/8ths of a side to cover in one case 78 square miles (cables are a little over 29,000 feet) or in another example 96 square miles (cables are 32,300 feet). In census block groups such as this, a substantial amount of cable, structure, and placement costs are omitted from

the price-out.

Q. Are there other areas of concern where significant costs are omitted?

A. Yes, there are. First, the HM2 incorrectly calculates the cost of all supporting structures such as poles and conduit systems. Excluding placement costs, the HM2 uses a material cost of $1.00 per foot for all conduit distances. This, according to Mr. Wood, represents the cost of a single conduit. The HM2 places the appropriate number of maximum size feeder cables and one overflow feeder cable for feeder routes with large numbers of copper pairs. It also calculates the number of fiber cables along with the same route. However, the HM2 provides only <u>one</u> 4" duct for all of the cables in the route even though each maximum-sized cable used in the route totally fills a 4" duct.

Additionally, the HM2 in its sharing ratio (33%) assumes that power and TV cable will simultaneously place facilities in the same trench used by the telephone duct. Underground runs are not shared with power facilities for safety reasons. Furthermore, sharing of the duct trench is not possible. Accordingly, the placement costs for

the conduit which are then allocated 67% to non-telephone services are less than that necessary to place the telephone facilities.

Further, the HM2 divides the total aerial facility distance by the distance between poles input. This fails to recognize the first pole in the aerial plant that is used to bring the cable above ground. Aerial distances less than the distances between poles are priced with one pole. No aerial facility will function with just one pole. In fact, HM2 understates all pole lines by the cost of at least 1 pole for each aerial segment.

Next, the HM2 reduces the impacts of terrain on the cost of cable placement from that which was in BCM version 1. All impacts from the presence of water near the surface were removed from the HM2 calculations. While rock presence is recognized by the HM2 if it is hard, this impacts costs only if the bedrock depth is within one foot of the surface. Although cables continue to be placed at depths at or beyond 24", no cost penalty is recognized in the HM2 for rock that is present between one foot down and the placement depth. Also, no penalty is recognized for any amount of soft rock, at any depth. The HM2 assumes that all impacts of terrain will simply

result in longer cable distances because the telephone company can avoid the terrain difficulty by going around it. While this occasionally happens in open rural areas, cable placement in most areas must follow the roads, rights-of-way, and easements assigned for utilities. This attempt by the HM2 to reduce the impact of terrain totally understate the real cost of placing facilities.

Q. Can these serious flaws be corrected with simple input changes?

A. No. These flaws are inherent parts of the model logic and cannot be changed by the user. These result in the HM2 being totally unusable without major internal revisions.

Q. Because the BCM 2 is also a computer model, doesn't it also suffer from the same defects as you indicate exist with the HM2?

A. No. And let me tell you why. BCM 2 in response to suggestions filed by parties in various federal and state proceedings has been revised in the following manner:

1. Adjustments were made to the distribution area to prohibit the placement of cable in unoccupied areas

that is based on individual census block group (CBG) geographic data. (BCM 2 uses roads specific to each CBG to make this adjustment.)

2. There has been a complete engineering redesign of the plant facilities within each CBG. The design incorporates the extension of feeder to an appropriate number of serving area interfaces, the placement of plant to coincide with the rear lot lines, the recognition of unique distribution facilities in urban and suburban areas, and the proper sizing, number, and lengths of all fibers and cables. In high-capacity CBGs such as found in urban or suburban areas, the BCM 2 model provides for a capacity-driven, low-cost fiber alternative. It also recognizes that in these densities, there is a high propensity for cable/conduit congestion, and recognizes the economies of fiber replacing copper in lieu of additional conduit relief. None of these changes are reflected in the HM.

3. At the specific request of the Joint Board, the slope of the terrain in a CBG was added to BCM 2 as an additional variable that impacts placement cost. The Joint Board Staff also requested that logic be added for an additional, yet-to-be-determined, generic terrain variable.

4. Smaller cable sizes for copper feeder and distribution cables are now incorporated in response to small companies stating that the original BCM used too large a minimum size.

5. The model tables the fixed and variable cost nature of digital line carrier with all standard size cabinets for AFC and SLC 2000 equipment included. BCM 2 uses the minimum size available cabinet required to serve the actual demand shown for each terminal location within the CBG.

Q. Have you attempted to run the HM2 with Florida-specific inputs?

A. Yes, without success. Because full runs were not possible, I reserve the right to file additional comments following receipt and analysis of the full set of data files and inputs.

Q. Could you describe the results?

A. Mr. Wood did not provide the full set of Sprint Florida-specific data inputs used to run the model such as the tandem and STP distances. Sprint has requested the fully populated model with all data files and inputs used in

the Florida runs but has not yet received it. No final results could be pulled from HM2 without receiving the full set of input data or all distance calculations for tandem, STP, and switch locations being completely duplicated.

Q. Does the BCM 2 have the same limitations?

A. No.

Q. Have you also used these same Florida-specific inputs with the BCM 2?

A. Yes. I have. The average monthly cost per line with the Florida-specific data changed as follows:

- The run with national defaults produced an average monthly cost per line of $24.77.
- The run with the Florida-specific data produced an average cost of $24.86.

The results between the BCM 2 Florida default and Florida-specific cost runs showed very little change.

Q. Please summarize your testimony.

A. The Hatfield Model in its present state (the HM2) is not

workable or meaningful. It incorrectly designs a network that will not in many of the locations provide a working dial tone for the subscriber. It does not place sufficient plant to serve the customer. It totally understates the cost of providing service by omitting units, incorrectly allocating cost units, or understating unit costs.

The HM2 is not reliable, does not produce enough network units to cost a workable network, and totally understates the cost of the loop. It requires major revisions before any loop costs can be accepted as close to reasonable.

The HM2 has continued the use of many of the flaws that were recognized in BCM version 1 and fixed in BCM 2, as well as introducing many new design errors that were not in BCM 1. The HM2 should not be used for any level of costing in this proceeding.

Q. Does this conclude your rebuttal testimony?

A. Yes, it does.

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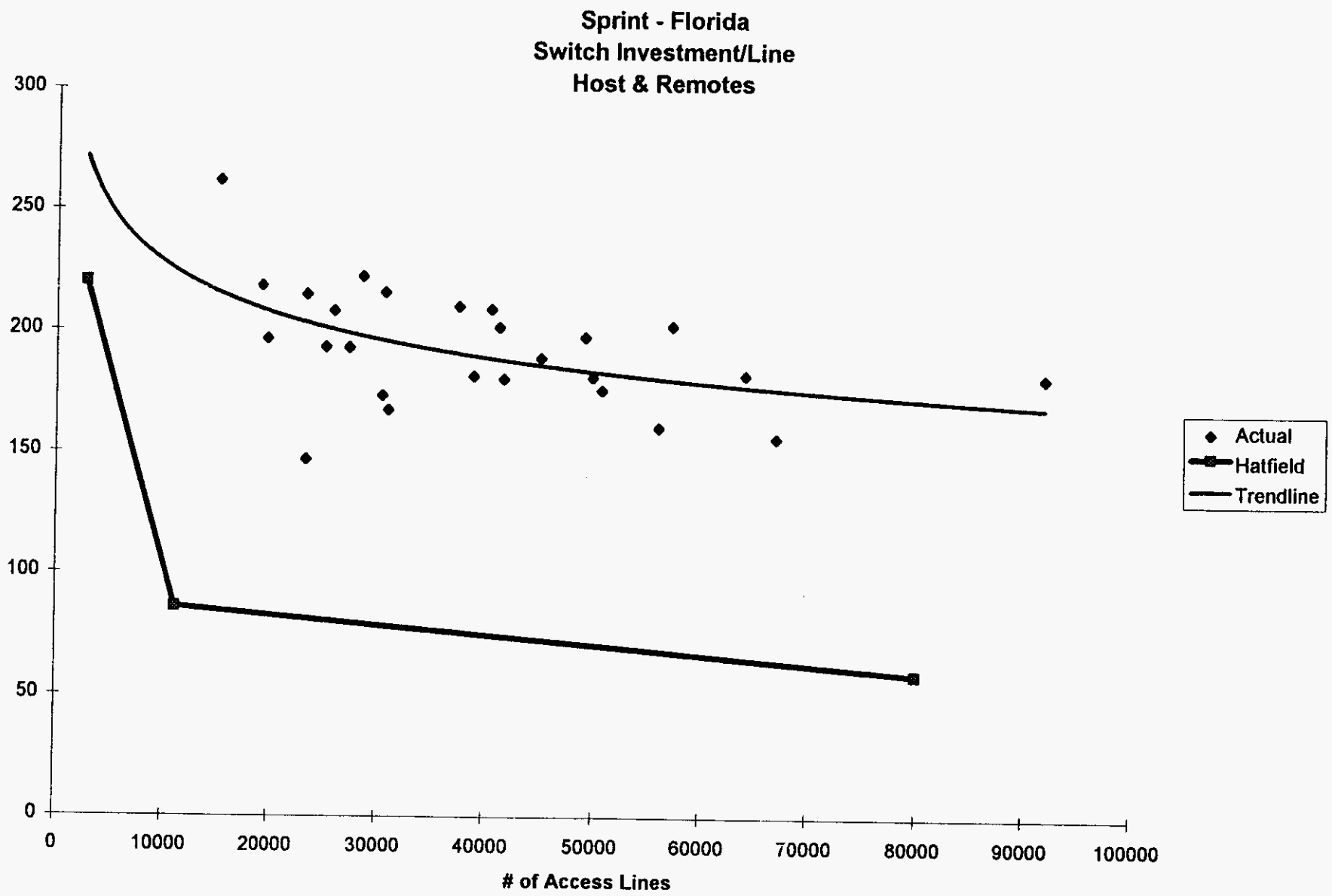
Sprint - Florida
Switch Investment/Line
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