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November 12, 1999

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

**VIA HAND DELIVERY**

Ms. Magalie Roman Salas  
Secretary  
Federal Communications Commission  
The Portals, 445 12<sup>th</sup> Street, S.W.  
Counter TW-A325  
Washington, D.C. 20554

Re: **Ex Parte Submission of Northpoint Technology, LTD.**  
**ET Docket No. 98-206/RM-9147, RM-9245**

Dear Ms. Salas:

Northpoint Technology, Ltd. ("Northpoint") hereby submits for filing in the above-referenced proceedings, notice of an *ex parte* meeting on November 10, 1999. Sophia Collier and Linda Rickman of Northpoint/Broadwave USA, Habib Riazi of Lucent Technologies and I met with Thomas Derenge, James Burtle, and Julius Knapp of the Office of Engineering and Technology ("OET") and Harry Ng of the International Bureau ("IB") to discuss the record in the above-referenced proceedings with regard to the Washington, D.C. DBS compatibility testing. The materials discussed are attached hereto.

Pursuant to Section 1.1206(b) of the Commission's rules, an original and one copy of this notice are being filed with the Secretary, and an additional copy is being served on the parties to the discussion. Please date-stamp the attached duplicate upon receipt and return it via the messenger for our records.

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Ms. Magalie Roman Salas  
November 12, 1999  
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If you have any questions concerning this matter, kindly contact the undersigned.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Antoinette Cook Bush".

Antoinette Cook Bush  
Counsel for Northpoint Technology, Ltd.

cc: Thomas Derenge (OET)  
James Burtle (OET)  
Julius Knapp (OET)  
Harry Ng (IB)  
Sophia Collier

*Northpoint Technology*  
*Broadwave USA*

Washington, D.C. DBS Compatibility Testing  
Presentation to the  
Federal Communications Commission  
November 10, 1999

## *Washington Test Program*

- The goal of the Washington testing was to assess the compatibility of Northpoint with DBS services in a real world environment
- Thousands of readings of DBS signal quality were made over a two month period with the Northpoint signal both “on” and “off”
- Successful co-channel reception of the Northpoint system and DBS was documented through measurements made at 44 test sites ranging from 15 feet from the transmitter to over 8 miles away

## *Worst Case Conditions Studied*

- Measurements were concentrated in the “worst case” region near the Northpoint transmitter where the Northpoint signal is strongest
  - About 75% of readings were within 1 square mile of a Northpoint transmitter
- This test area represents less than 1% of Northpoint’s 100 square mile service area, but is the area of maximum interference concern
- Testing was also conducted during Hurricane Floyd, a severe weather event



## *Types of Testing Conducted*

- Measurements were taken with Northpoint both “on” and “off” for all DBS services operating in Washington
  - Consumer impact was measured through observed video quality and readings of the “Signal Strength Pointer” (SSP) - an antenna pointing aid built into every DBS consumer set top box
  - Precise readings of link characteristics and bit error were made with a laboratory grade Newtec demodulator
  - Power levels were measured with a spectrum analyzer

## *Very Close Range Tests*

- Special attention was paid to DBS receive systems in operation very near the Northpoint transmitter
  - On same roof as main transmitter (USA Today building)
  - On adjacent condominium buildings
- No interference mitigation was required for coexistence with DBS
  - To demonstrate the lack of harmful interference, an Echostar and DirecTV system were operated during the FCC demos with no impairment only 15 feet from the Northpoint transmitter

## *The DBS Signal Strength Pointer*

- Normal range is from 0-100 ticks with “Quasi-error free” operation between 28-100 ticks
- Without Northpoint, the SSP exhibits normal variances, both temporal and spatial, resulting in a “bounce” of 1 - 5 ticks within a 10 second period and a larger variance from site to site
- During Washington testing, the clear air SSP readings ranged from 74 to 98 with Northpoint “off” and from 72.4 to 98 with Northpoint “on”
- During Hurricane Floyd the lowest value observed corresponded to the storm’s highest rain rate when the SSP read 50 with Northpoint “on” - a full 22 ticks higher than the minimum required

## *Consumer Set Top Box Confirms Lack of Interference*

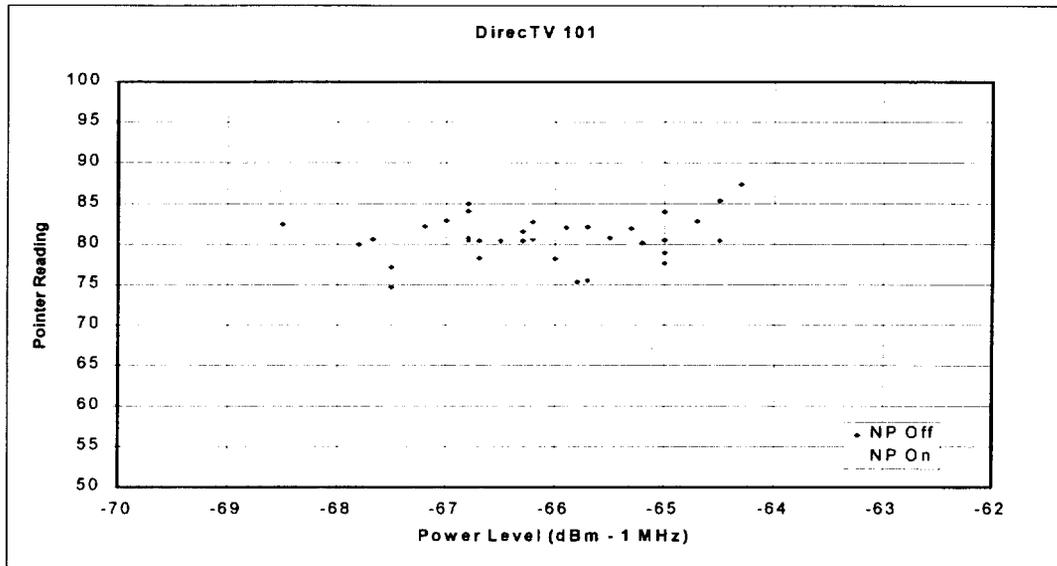
- No detectable Northpoint effect in sites representing 99% of the Northpoint service area
- Small deflections (1 - 5 ticks) were seen at certain test sites
- 40% of readings showed higher SSP (improved signal quality) with Northpoint “on”
- The average change between Northpoint “on” and “off” was not statistically significant at a 95% confidence limit - what this means is that the average inherent variance in SSP is greater than the variance we were trying to measure in the testing

## Signal Strength Pointer Test Results

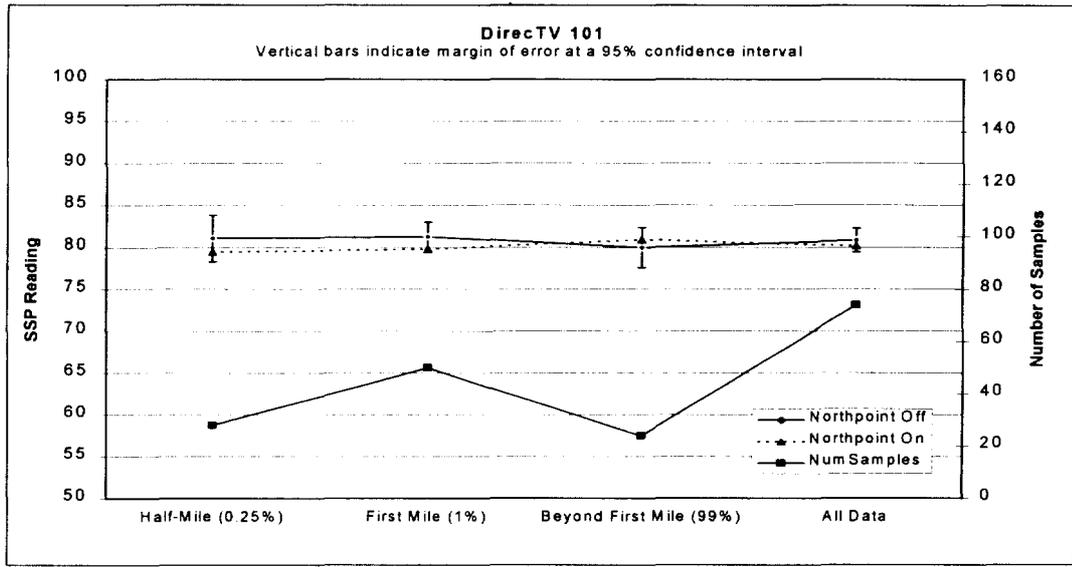
	DirecTV 101	Echostar 61.5	Echostar 119
Average SSP Meter (Northpoint Off)	80.8	92.0	88.7
Average SSP Meter (Northpoint On)	80.1	91.7	88.5
Average Change	-0.7	-0.3	-0.2
SSP Spatial Deviation (Northpoint Off)	2.7	4.3	4.3
SSP Temporal Deviation (Northpoint Off)	2.1	0.6	0.4

- Average change with Northpoint “on” is smaller than the normal range of the SSP’s variation in time and space. This reflects a robust DBS system with and without the presence of Northpoint.

# SSP Readings for DirecTV



*No Significant Difference Between  
"On" and "Off" Conditions for DirecTV 101*

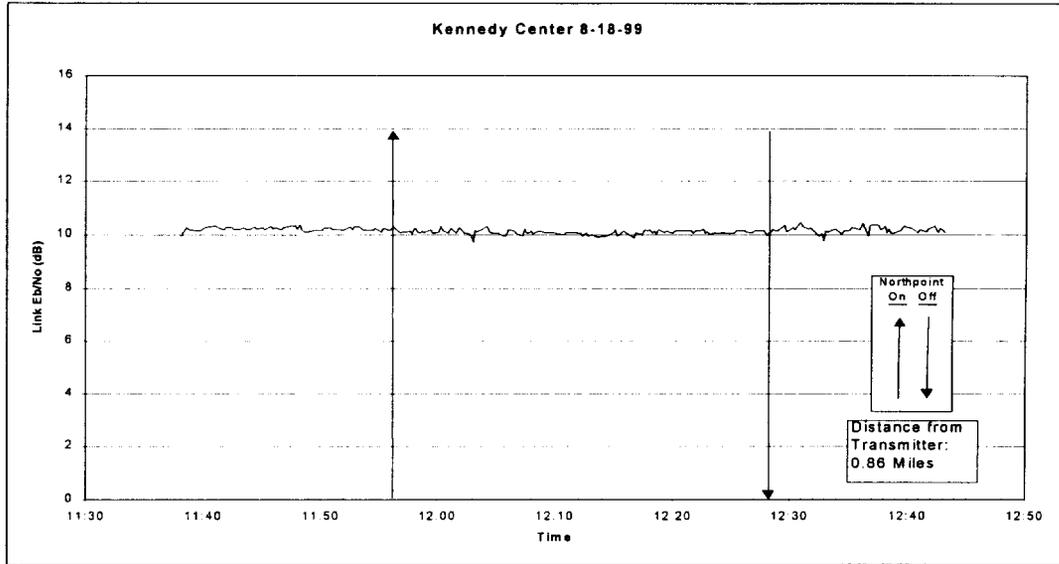


## *Professional Demodulator Tests Confirm Lack of Harmful Interference*

- Professional demodulator measures link performance
- With Northpoint signal present:
  - No increase in bit error rate was found
  - At closest test sites, insignificant effect on link margin: average less than 0.1 decibels

# Typical Result of Eb/no Tests

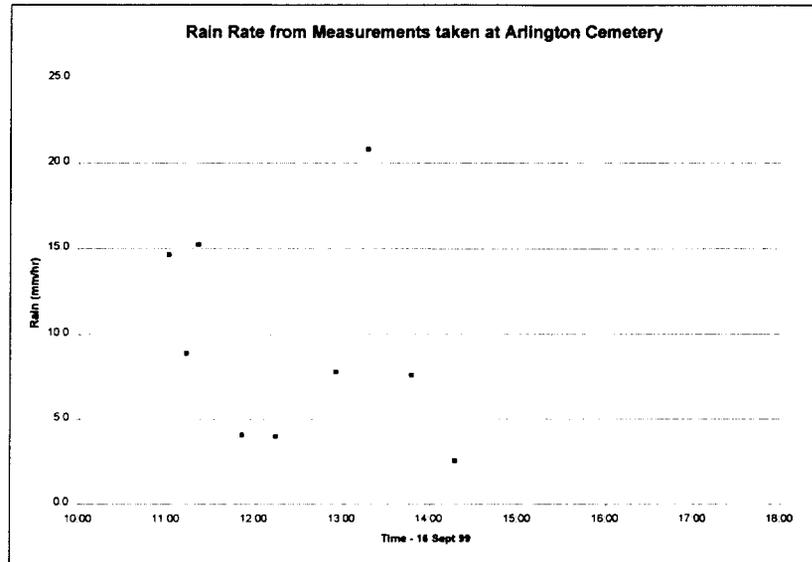
Echostar 119, Kennedy Center



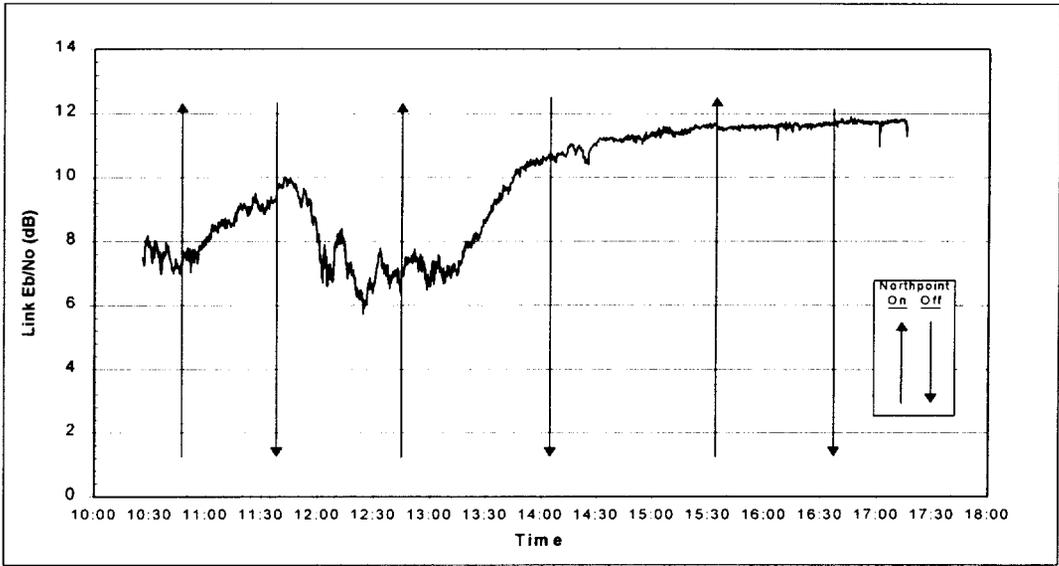
*No DBS Failures  
During Extreme Weather*

- Testing during Hurricane Floyd demonstrates Northpoint's all-weather compatibility with DBS
  - Hurricane Floyd was worse than 999 out of 1000 rain events
- At no time did the Northpoint signal fail during Hurricane Floyd nor did it cause the failure of the DBS system
- SSP never went below 50 (Range 28 - 100 is Quasi-error range)

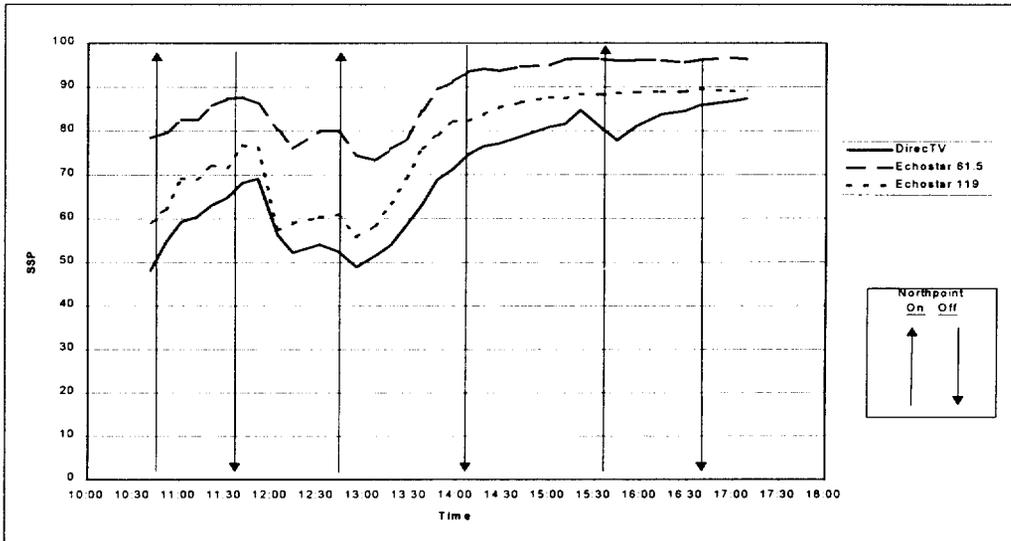
## *Rain Rates From Measurements Taken at Arlington Cemetery*



# Observed Eb/no for Echostar 119 W, Hurricane Floyd

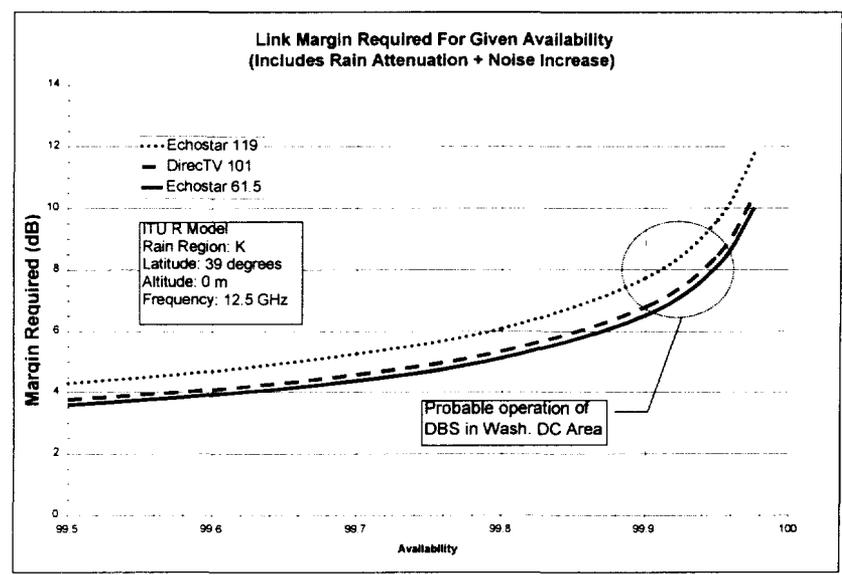


## SSP Readings During Hurricane Floyd, September 16, 1999



A reading of 28 is the minimum value for quasi-error free operations  
(DirecTV presentation to FCC 7/21/99)

# Link Margin Requirements for DBS in Washington, D.C.



## *Multi-cell Tests Successful*

- Northpoint is a cell-based system
- Overlapping Northpoint cells were tested
  - The transmitters were separated by over 6 miles
  - Reading were taken near both transmitters and in areas of maximum overlap
- No detrimental effects on DBS or Northpoint (self interference) were found as a result of multi-cell operations
- SSP readings at the site with maximum overlap (Site R7) were indistinguishable from results in other locations
- Multi-cell test demonstrates that Northpoint is ready for deployment

## *No Harmful Interference Found*

- Not a single case of harmful interference was found or reported to us by the FCC or any member of the public
- Consumer set top box test confirms lack of harmful interference
- Professional demodulator tests confirm lack of harmful interference
- No DBS or Northpoint failures during Hurricane Floyd, despite Northpoint testing throughout the event

## *The DBS Industry Record Prior to Northpoint's Washington Tests*

Fourteen DBS filings and other communications opposed testing:

“Echostar has thousands of subscribers in the Washington D.C. area. There are far too many DBS subscribers in this area that would be placed at risk of receiving harmful interference from Northpoint’s operations.” - *Emergency Petition for a Cease and Desist Order, Echostar (July 26, 1999)*

“DirecTV vigorously objects to DCE [transmitting] at the expense of tens of thousands of Washington, D.C.-area DBS subscribers who are likely to experience some form of harmful interference from DCE’s testing.” - *Letter to Dale Hatfield from Counsel for DirecTV (March 25, 1999)*

“With tens of thousands of subscribers in the vicinity of the proposed test sites, *interference is unavoidable* - it is only a question of how much. - *Ex Parte Filing, (Briefing to the Commission) DirecTV, (23 June 1999)*

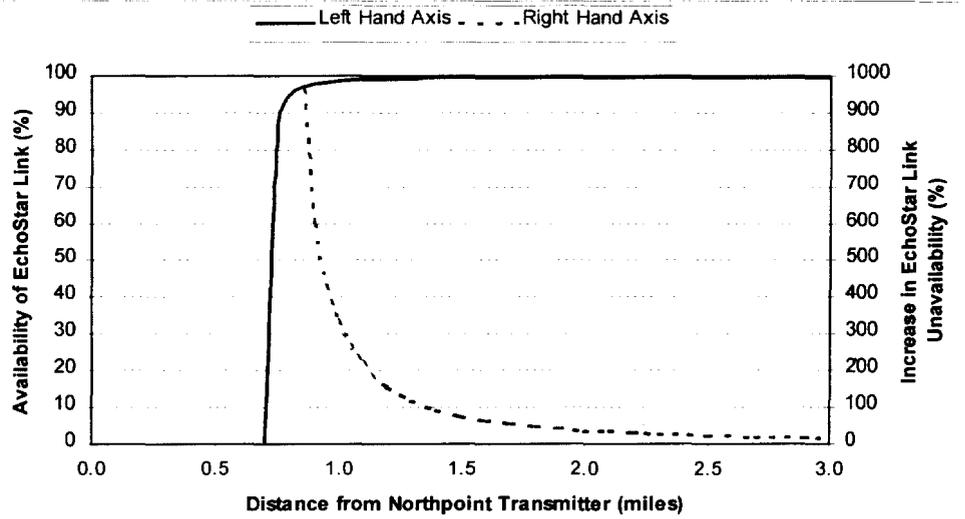
## *DBS Industry Response to Northpoint Test Results*

- Not a single case of harmful interference to a single DBS customer was documented for the entire two month Northpoint test period
- Now, absent any showing of actual harmful interference, Echostar in its October 29, 1999 Report to the FCC says that the lack of customer complaints was “predictable” and due to unrepresentative nature of Northpoint’s test sites

## *Echostar's Test Program*

- Echostar took readings at only one location in the Washington, D.C area - stating that "*it did not have time to obtain permits*" for other sites
- Echostar took four readings at this location, but based its report solely on most anomalous of these reading, even though its own consultant warned "*It is not exactly clear why the signal strength readings differed for the cases when the Northpoint transmitter was turned on*"
- Based on this one reading, Echostar claimed to have found sufficient harmful interference to cause their *link to fail* at distances within 0.7 miles from the Northpoint transmitter

*Actual Figure 2 from Echostar's Report:*



“Northpoint Interference to Echostar Receivers - Washington DC”

## *Echostar's Assertions Disproved*

- Echostar made no effort to document this incredible claim
  - No test sites are presented where a signal failure is noted
  - No customers are presented where a signal failure occurred
- The FCC Field Office visited the same West Potomac Park location and took its own signal readings - to Northpoint's knowledge, no finding of harmful interference was made by the FCC Field Office
- Summary - Echostar's assertion of harmful interference and link failure from Northpoint's testing is incorrect and the model of the Northpoint system created from this reading is also wrong

## *Were the Test Sites Representative of Typical Northpoint Deployments?*

- Echostar says that Northpoint's USA Today transmitter location is unrepresentative:
  - Surrounded by lower than average population density
  - Such locations are rare
- Echostar is incorrect. Terrestrial transmit towers tend to be located in areas of lower than average population
- In June 1999 Northpoint presented the FCC with documentation on 23 actual tower locations sufficient to serve 1.3 MM households in the Washington, D.C. area
- The average population near these towers in the direction of Northpoint transmissions is approximately 1/17th of the average

"Conceptual Design for the Washington Market" FCC Presentation 6/17/99

## *“Conceptual Design for the Washington Market” Revisited*

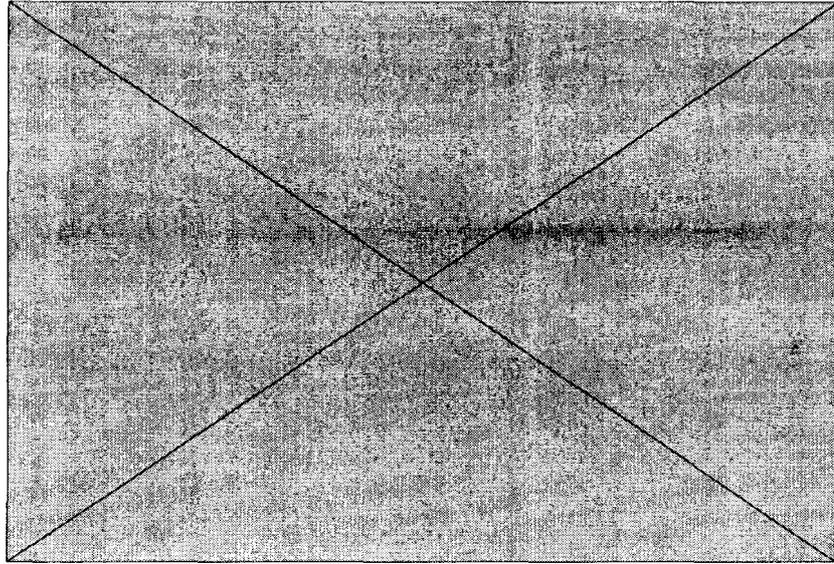
- 23 locations
  - Each is a current operating antenna site available to Northpoint
  - Tower height, transmitter power levels, bearing and beam tilt have been identified for each site
  - C/I contours have been calculated based on free space loss factors and beam tilt - no highly localized mitigation techniques
  
- Results for Washington Market:
  - Households served - 1.3 MM / 1425 square miles
  - Households within contours
    - 15 dB C/I = 64 (6 DBS Subs/1 without natural shielding)
    - 20 dB C/I = 372 (37 DBS Subs/5 without natural shielding)

Northpoint's nationwide consumer survey of 400 DBS subscribers found 86% have natural shielding 7/99

## *Highly Localized Mitigation Techniques Can Benefit Northpoint*

- In our Washington field test, we successfully demonstrated near-in transmitter shielding as a mitigation method at both the USA Today and the Fort Lincoln site
- At Fort Lincoln the repeater was set back from the building face, in order to shield the ground near the transmitter, resulting in a 5-10 dB reduction in power level
- This significantly reduced the area within the 15 and 20 dB contours that had been forecast based on free space loss factors alone
- Techniques of this nature can completely eliminate the risk of harmful interference to all DBS households in the Northpoint service area

*Local Engineering Reduces Power Levels*



## *Summary*

- Extensive field testing confirms that Northpoint is compatible with DBS systems
  - No harmful interference found
  - Multi-cell and all-weather compatibility demonstrated
- Northpoint is a viable technology and ready for deployment