

**ENGINEERING EXHIBIT**

**IN SUPPORT OF AN APPLICATION  
FOR AUXILIARY ANTENNA LICENSE**

**AUXILIARY OPERATION AT THE EMPIRE STATE BUILDING  
WABC-DT – NEW YORK, NEW YORK  
CHANNEL 45 – 219 KW – 397 M HAAT**

Permittee: American Broadcasting Companies, Inc

**CARL T. JONES**  
*CORPORATION*

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## **ENGINEERING STATEMENT**

### **IN SUPPORT OF AN APPLICATION FOR AUXILIARY ANTENNA LICENSE**

#### **AUXILIARY OPERATION AT THE EMPIRE STATE BUILDING WABC-DT – NEW YORK, NEW YORK CHANNEL 45 – 219 KW – 397 M HAAT**

Permittee: American Broadcasting Companies, Inc

I am a consulting engineer, an employee of the Carl T. Jones Corporation, with offices in Springfield, Virginia. My education and experience are a matter of record with the Federal Communications Commission. I am a Registered Professional Engineer in the Commonwealth of Pennsylvania, Registration Number PE-027589E.

American Broadcasting Companies, Inc., permittee of DTV station WABC-DT, channel 45, New York, New York, has authorized this office to prepare this statement, FCC Form 302 technical entries and associated exhibits in support of an application for license to operate an auxiliary facility at the Empire State Building. The outstanding Construction Permit bears FCC File Number BXPCDT-20040803ACD and authorizes operation with an ERP of 219 KW and an HAAT of 397 meters, with use of a non-directional antenna. The existing Harris TAD-16UDASP-4/32 antenna is shared with several other stations through use of a channel combiner. The Empire State Building bears Antenna Structure

Registration Number 1007048 and is 4.67 kilometers distant from the reference coordinates in the WABC-DT initial allotment.

WABC-DT was authorized an initial allotment of 164 KW at 491 Meters HAAT at the World Trade Center. WABC-DT commenced operation of DTV facilities at the World Trade Center and filed an Application for License to cover the Construction Permit BMPCDT-20000508AAS, which specified operation with 182.4 KW and an HAAT of 448.0 meters. These facilities were destroyed in the events of September 11, 2001.

WABC-DT will operate from this auxiliary antenna as necessary to provide continuity of service for WABC-DT. Replacement facilities for those that were lost in the events of September 11, 2001 have been in various planning stages since the attacks on the World Trade Center. Recently, WABC-DT has been operating from the Empire State Building under Special Temporary Authority. The facilities at the Empire State Building have reached a stage of development that is sufficiently stable that an auxiliary antenna can be operated within the terms of its license. The outstanding construction permit authorizes auxiliary DTV operation with an ERP of 219 KW and an HAAT of 397 meters.

The UHF antenna installed at the Empire State Building is presently shared by several stations. WABC-DT has obtained a lease agreement to use the Harris TAD-16UDASP-4/32 non-directional antenna in a shared arrangement with other stations. The antenna has been installed with a center of radiation of 395.0 meters above ground level, which is equal to 410.0 meters AMSL. At this

location, the proposed antenna is 397 meters above average terrain. WABC-DT has been working with other broadcasters and the Empire State Building to develop an infrastructure to support operation of additional stations in a combined UHF facility, and the permitted WABC-DT auxiliary facilities are now part of the overall plan at Empire.

Equipment Performance measurements show that WABC-DT and the other users of the combined UHF antenna system at the Empire State Building indicate that the channel combining system as assembled and adjusted meets the requirements of the Commission's Rules regarding intermodulation, spurious, and harmonic emissions for UHF television stations.

The proposed DTV Auxiliary operation meets all the requirements of Section 73.622 of the Rules. The facility as constructed is in full accord with the parameters authorized in the outstanding construction permit and meets the Commission's requirements stated in Section 73.1675(a) of the Rules, as shown in the figures which are attached as Exhibits and are a part of this Engineering Statement.

The proposed auxiliary operation meets the requirements of Section 73.625 and provides predicted city grade coverage greater than 48 dBu F (50:90) over the entire city of license, New York, New York.

All pertinent technical parameters are shown in the associated FCC Form 302. Compliance with the Commission's principal community coverage requirement is shown in the attached Exhibit 2. Exhibit 1 is a figure that shows

the proposed facility operating with 219 KW ERP and an HAAT of 397.0 meters is in compliance with the FCC's DTV rules and policies regarding auxiliary antenna operation in that the predicted coverage which results does not, in any direction exceed that resulting from WABC-DT's allotted parameters.

Exhibit 1 shows the predicted 41 dBu contours from the permitted operation and the Initial Allotment. The predicted 41 dBu contour which results from the proposed operation specified in this application for auxiliary license is fully subsumed within the predicted 41 dBu contour of the WABC-DT Initial Allotment.

Exhibit 2 is a figure that is part of this Engineering Exhibit and shows that the proposed operation provides 48 dBu coverage of the city of license, New York.

Exhibit 3 is a figure containing three sheets that shows the vertical pattern and also contains a tabulation of the relative field values produced by the proposed antenna.

### **Compliance with Radiofrequency Energy Exposure Limits**

The permitted operation complies with the FCC's rules and guidelines pertaining to human exposure to electromagnetic energy. The Empire State Building has established policies and procedures and has defined certain areas as controlled areas where access is restricted to all persons unless certain facilities cease operation, change antennas or reduce power. A procedure to

notify tenants of a required shutdown has been developed. As a lessee, WABC-DT is subject to the Empire State Building's RF Safety Program, which is currently being revised as modification of facilities occurs. The RF Safety Program is being revised as a collaborative effort between the broadcaster tenants and the building management. A comprehensive measurement program is presently underway under the supervision of the Metropolitan Television Alliance (MTVA) to characterize the contributions from various sources that have undergone changes, as well as those sources that have been long term residents of the Empire State Building. The MTVA has been actively engaged in the RF Safety Program at the Empire State Building on behalf of its member stations. Data concerning WABC-DT's operation has been supplied as part of the collaborative effort working toward the next revision of the RF Safety Procedures that is presently underway.

The RF Safety Procedures at the Empire State Building include restricted access to areas where calculation or measurement indicate levels of radiofrequency energy in excess of those defined in Section 1.1310 of the Rules may be present during normal broadcast operations. The RF Safety Procedures include restricted access to the tower structure above the mooring mast area during normal broadcast operations, the use of on-site personnel to verify continuing shutdown of those operations that contribute to fields in areas where workers must be present while work is being done.

Remote control operation is disabled to prevent accidental exposure of personnel from inadvertent activation of transmitters. Prior to any work in a controlled area, each facility is observed to be compliant with procedures to shutdown or operate at reduced power as required by the location of work. These RF Safety Procedures also define the requirement for personnel to use personal RF exposure monitors and participate in appropriate RF safety awareness training. As new licensees begin or change operations on the Empire State Building, the RF Safety Procedures are updated to reflect the current RF exposure levels and define the areas that are restricted to prevent accidental exposure of personnel.

### **Conclusion**

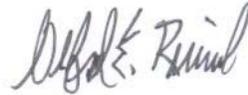
The Empire State Building is uniquely suited as a site for television transmission. WABC-DT has persistently used its best efforts to improve digital television service to New York through cooperative efforts with the Empire State Building management and their mechanical and electrical engineers, and collaborative efforts with other broadcaster's engineering representatives and equipment manufacturers to optimize DTV service from limited and refurbished facilities at the Empire State Building.

The facilities represented in this application for auxiliary license satisfy the terms and conditions of the outstanding construction permit and meet all the Commission's requirements for digital television transmission.

The instant application for auxiliary antenna license to improve digital television service by WABC-DT complies with all the policies, rules and regulations of the Federal Communications Commission, and a grant of this application would be in the public interest.

This statement and the associated exhibits and the technical portions of FCC Form 302-DTV were prepared by me or under my direct supervision and are believed to be true and correct to the best of my knowledge and belief.

Dated: October 11, 2005



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Alfred E. Resnick, P. E.

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Questions regarding the technical content of this application should be addressed to this writer at the telephone number or electronic mail address shown above.



— Allotment (164.3 kW 491 m HAAT)  
- - - Aux (219.0 kW 397 m HAAT)

PREDICTED 41dBu F[50:90] CONTOURS  
WABC-DT, NEW YORK, NEW YORK  
CHANNEL 45  
OCTOBER, 2005

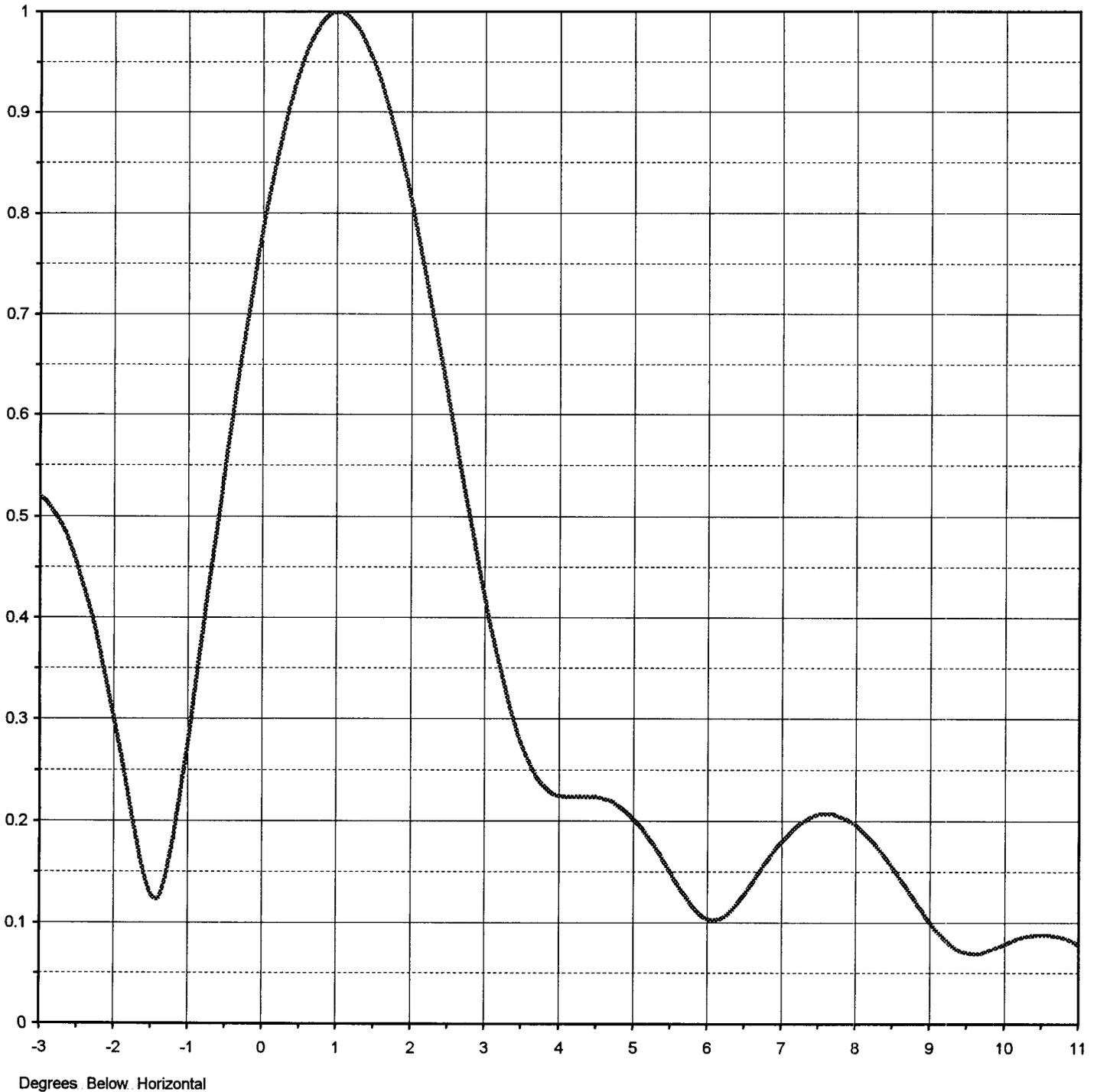




Proposal Number EXHIBIT 3  
Date 5-Nov-01  
Call Letters Channel 45  
Location New York, NY  
Customer CBS  
Antenna Type TAD-16UDASP-4/32

### ELEVATION PATTERN

RMS Gain at Main Lobe	16.57 ( 12.19 dB )	Beam Tilt	1.00 deg
RMS Gain at Horizontal	10.10 ( 10.04 dB )	Frequency	659.00 MHz
Calculated / Measured	Calculated	Drawing #	100402EL45100





Proposal Number  
Date **5-Nov-01**  
Call Letters  
Location **New York, NY** Channel **45**  
Customer **CBS**  
Antenna Type **TAD-16UDASP-4/32**

**ELEVATION PATTERN**

RMS Gain at Main Lobe	<b>16.57 ( 12.19 dB )</b>	Beam Tilt	<b>1.00 deg</b>
RMS Gain at Horizontal	<b>10.10 ( 10.04 dB )</b>	Frequency	<b>659.00 MHz</b>
Calculated / Measured	<b>Calculated</b>	Drawing #	<b>100402EL45100-90</b>

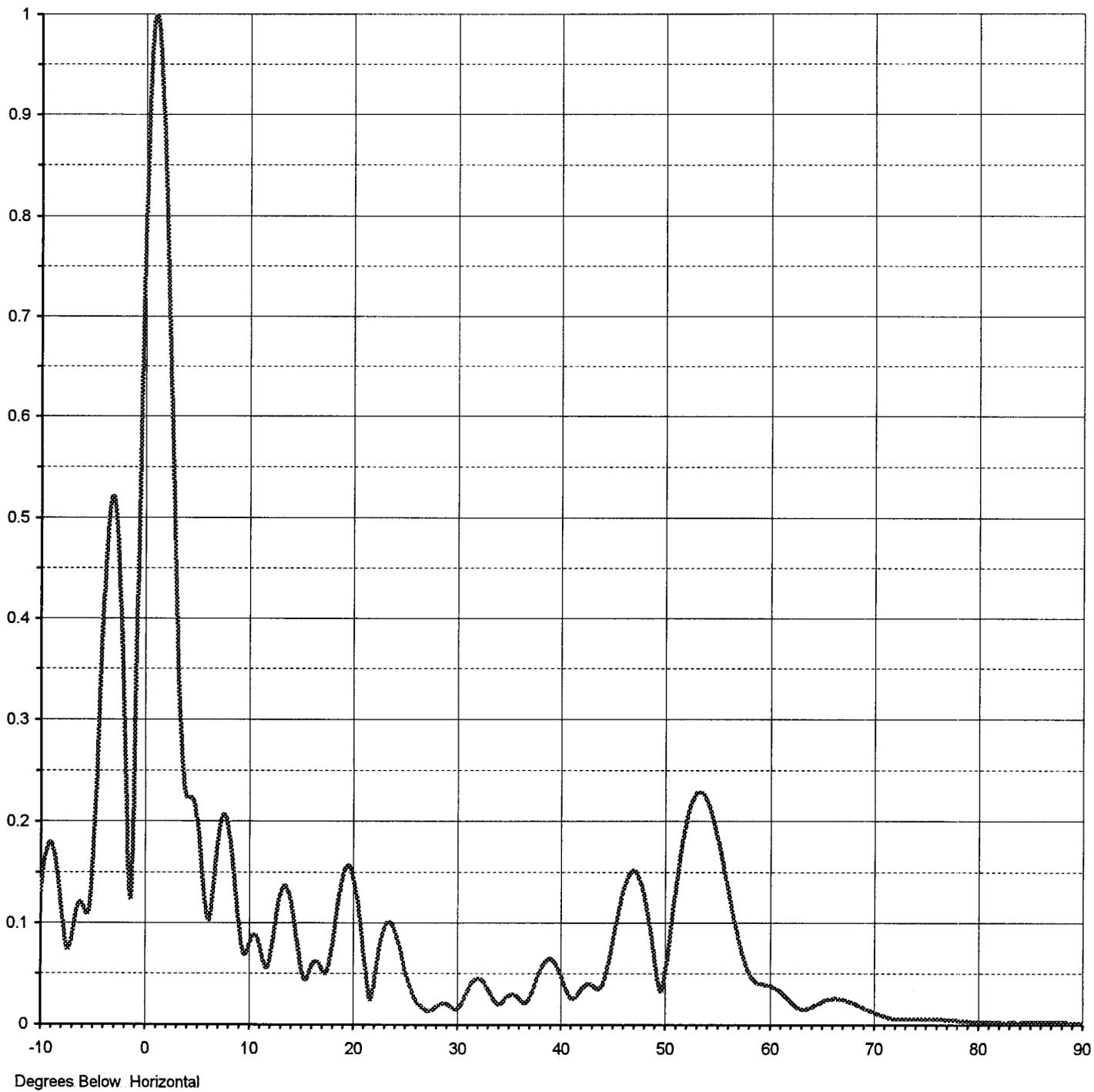


EXHIBIT 3



Proposal Number  
 Date **5-Nov-01**  
 Call Letters Channel **45**  
 Location **New York, NY**  
 Customer **CBS**  
 Antenna Type **TAD-16UDASP-4/32**

**TABULATION OF ELEVATION PATTERN**

Elevation Pattern Drawing #: **100402EL45100-90**

Angle	Field										
-10.0	0.131	2.4	0.659	10.6	0.088	30.5	0.021	51.0	0.128	71.5	0.007
-9.5	0.169	2.6	0.578	10.8	0.087	31.0	0.032	51.5	0.166	72.0	0.006
-9.0	0.179	2.8	0.497	11.0	0.082	31.5	0.041	52.0	0.196	72.5	0.006
-8.5	0.158	3.0	0.421	11.5	0.061	32.0	0.045	52.5	0.217	73.0	0.006
-8.0	0.113	3.2	0.352	12.0	0.061	32.5	0.043	53.0	0.228	73.5	0.006
-7.5	0.075	3.4	0.297	12.5	0.092	33.0	0.036	53.5	0.229	74.0	0.006
-7.0	0.089	3.6	0.257	13.0	0.124	33.5	0.026	54.0	0.222	74.5	0.006
-6.5	0.116	3.8	0.234	13.5	0.137	34.0	0.020	54.5	0.207	75.0	0.006
-6.0	0.118	4.0	0.225	14.0	0.126	34.5	0.023	55.0	0.186	75.5	0.006
-5.5	0.110	4.2	0.224	14.5	0.097	35.0	0.028	55.5	0.162	76.0	0.006
-5.0	0.164	4.4	0.224	15.0	0.061	35.5	0.030	56.0	0.136	76.5	0.006
-4.5	0.280	4.6	0.222	15.5	0.044	36.0	0.026	56.5	0.110	77.0	0.005
-4.0	0.406	4.8	0.215	16.0	0.055	36.5	0.022	57.0	0.086	77.5	0.005
-3.5	0.496	5.0	0.202	16.5	0.062	37.0	0.025	57.5	0.066	78.0	0.004
-3.0	0.520	5.2	0.184	17.0	0.056	37.5	0.038	58.0	0.052	78.5	0.004
-2.8	0.504	5.4	0.161	17.5	0.051	38.0	0.051	58.5	0.044	79.0	0.004
-2.6	0.475	5.6	0.137	18.0	0.075	38.5	0.061	59.0	0.040	79.5	0.003
-2.4	0.430	5.8	0.116	18.5	0.112	39.0	0.065	59.5	0.039	80.0	0.003
-2.2	0.373	6.0	0.104	19.0	0.143	39.5	0.061	60.0	0.039	80.5	0.003
-2.0	0.303	6.2	0.105	19.5	0.156	40.0	0.051	60.5	0.036	81.0	0.003
-1.8	0.226	6.4	0.119	20.0	0.148	40.5	0.037	61.0	0.033	81.5	0.003
-1.6	0.153	6.6	0.140	20.5	0.120	41.0	0.027	61.5	0.028	82.0	0.003
-1.4	0.124	6.8	0.161	21.0	0.077	41.5	0.027	62.0	0.023	82.5	0.002
-1.2	0.179	7.0	0.180	21.5	0.033	42.0	0.034	62.5	0.018	83.0	0.003
-1.0	0.275	7.2	0.195	22.0	0.037	42.5	0.039	63.0	0.016	83.5	0.002
-0.8	0.382	7.4	0.204	22.5	0.071	43.0	0.039	63.5	0.015	84.0	0.002
-0.6	0.491	7.6	0.207	23.0	0.094	43.5	0.036	64.0	0.017	84.5	0.003
-0.4	0.596	7.8	0.204	23.5	0.101	44.0	0.038	64.5	0.020	85.0	0.003
-0.2	0.694	8.0	0.196	24.0	0.094	44.5	0.054	65.0	0.023	85.5	0.003
0.0	0.782	8.2	0.182	24.5	0.077	45.0	0.079	65.5	0.025	86.0	0.003
0.2	0.857	8.4	0.164	25.0	0.055	45.5	0.106	66.0	0.025	86.5	0.003
0.4	0.917	8.6	0.143	25.5	0.038	46.0	0.129	66.5	0.025	87.0	0.003
0.6	0.962	8.8	0.121	26.0	0.025	46.5	0.145	67.0	0.025	87.5	0.003
0.8	0.990	9.0	0.100	26.5	0.019	47.0	0.152	67.5	0.023	88.0	0.003
1.0	1.000	9.2	0.083	27.0	0.014	47.5	0.147	68.0	0.021	88.5	0.002
1.2	0.992	9.4	0.072	27.5	0.014	48.0	0.130	68.5	0.019	89.0	0.002
1.4	0.967	9.6	0.069	28.0	0.017	48.5	0.103	69.0	0.016	89.5	0.002
1.6	0.928	9.8	0.070	28.5	0.020	49.0	0.068	69.5	0.014	90.0	0.002
1.8	0.875	10.0	0.076	29.0	0.021	49.5	0.036	70.0	0.012		
2.0	0.811	10.2	0.082	29.5	0.018	50.0	0.046	70.5	0.010		
2.2	0.738	10.4	0.087	30.0	0.015	50.5	0.086	71.0	0.008		