No.	Date	Item
1.	12/16/91	Burkhardt Monitoring Service, AM Measurements
2.	12/12/91	AM Technnical Assignment Criteria (MM Docket 87-267)
3.	12/2/91	Broadcasting, DGE's Comments
4.	11/26/91	WLEE, Radiolocation Frequency Assignments
5.	11/25/91	The AM Game's New Rulebook
6.	11/25/91	Idea Bank, Station Information
7.	11/21/91	Transcript of AFCCE Luncheon, Evans Associates
8.	11/15/91	Burkhardt Monitoring Service, Measurements
9.	10/28/91	Preliminary Observations (Docket 87-267)
10.	9/26/91	FCC Amends Rules to Improve the Quality of the AM Broadcast Service (MM Docket 87-267)

11.	9/11/91	The Emergency Broadcast System to Hold Regional Workshop in Chicago
12.	8/30/91	Memo re AM Applications
13.	6/24/91	AM Radio -- To Be or Not to Be
14.	6/21/91	Further Comments (MM Docket 87-267) Review of Technical Assignment Criteria for AM Broadcast Service
15.	1991	WMP Notes

BURKHARDT MONITORING SERVICE
P.O. Box 1411
Glen Allen, Virginia 23060
(804) 261-2800

December 16, 1991

Dear Warren:

USCG Norfolk called today and said his Wash., DC communications man advised that the Coast Guard has no operations 1600-1700 kc/s.

I can supply three year records on AM stations measured monthly that will show fairly stable operations. Example of a few stations are:

+1.5 +1.3 +1.5 +1.6 +1.8 +1.6 +1.4 +1.6 +0.8 +1.2 +0.9 +0.5 +0.8 +1.0
+0.7 +0.9 +1.2 +1.2 +0.8 +1.0 +1.1 +1.1 +2.0 +0.3 +1.3 +1.4 +1.9 +1.3
+1.2 +0.6 +0.8 +0.4 +0.8 +1.1 +1.2

-0.7 -0.6 -0.6 -0.9 -0.8 -0.7 -1.0 -0.8 -0.8 -0.7 -0.9 -0.9 -1.0 -0.8
+0.6 -0.7 +0.8 -1.1 -0.7 -0.7 -1.0 -0.9 -0.9 -0.8 -0.9 -0.8 -0.6 -0.8
-0.8 -0.7 -0.9 -0.8 -0.8 -0.9 -0.9 +0.9

(one of the worst)
+2.1 +2.6 +5.3 +4.7 -0.7 +6.4 +4.9 +1.1 +0.5 -1.7 -3.1 +0.4 +1.7 +0.4
-0.6 +1.6 +9.6 +8.7 +0.5 -2.5 -2.7 -1.5 +1.9 +5.7 +7.3 +6.9 +6.9 +2.6
-0.1 +0.8 +0.2 -0.5 -1.2 -2.3 +3.3 +1.9

121 WYCK STREET • SUITE 300 • RICHMOND, VIRGINIA 23225 • (804) 232-0300
(804) 276-3804 FAX

FACSIMILE TRANSMITTAL SHEET

Date: 16 Dec 91 Time: 2:05 Pm

To: W. Powis FAX number 202-898-0895

TEL number

From: E.O. B. FAX number 804-276-3804

Radio Station WLEE
121 Wyck Street, suite 300
Richmond, VA 23225

TEL number 804-232-0300

This transmission contains 3 pages including this page.

MESSAGE: "Top Band" list, right column is orig. Added stations on left side.

1605						
10						1610 1610.036 WEAK
15						
20						1619.982 1619.997 weaker
25						
30						1630 9W2H 1633 B129 KA960E9
35			1639 MCM		1636	1634 9W244 1637 A219
40						1639 CW "RO" 1640 DAW
45			1642 KA85036		1645 A378	1646.7 RADIST
50			1646			
55						1659 9W337
60			1658 KA83323 1658 A388			1660 9W040
65			1663 B158 1662.5 GDY		1666 KA83974	1666 Beacon 9W346 B161 9W116
70			1670 9W120			1670 9W350 1670 KA9:370
75			1675 A305	1676 B171	1673 KA88981 1677 B22V	1674 QF89 1674 SLOW DASHES (POSSIBLE CW)
80					1685 B178	1683 BA88 9W263 9W133 1681.6 SHARP PULSES every 0.76"
85					1688 A354	16849 MCW Beacon "MER" "E" 1685 BA90 9W265
90			1693 B198			1692 11/8/91 04002 KA90237 CW W 316°E 1692 11/10/91 04532 B187 - CW
95					1696 A326	1695 B500 1698 MCW B193
1700						1699.96 MCW Beacon "CPA" 1700.010 MULTIPLEX
05						1706 MULTIPLEX
10						
15						1717.4 RADIST (STRONG) 1719 V 45K
						1721.4 RADIST (STRONG) 1723.8 " 1724.6 "

Monday Memo

"The role that AM was required to fulfill in the past now serves to its detriment."

The FCC embarked on its long review of the status of the AM radio service in 1986, and just adopted the basic tenants in Docket 87-267. Based on initial review of the FCC's order, it appears the rules, instead of breaking the shackles of the past, have adopted the handcuffs of the future.

AM radio, once the king, helped nurture "infant" FM and television operations. AM now faces a "do or die" prospect in many markets. AM radio for many years has provided a multitude of daytime and nighttime service for small and large cities. AM has introduced and delivered many of the innovative changes in aural broadcasting.

This suggests that AM radio has survived by virtue of its ability to introduce change in response to the demands of the listening public. It is that quality that the FCC now needs to reinforce in its technical rules.

These technical revisions require reviewing the structure, service and implementation of AM stations. The clear channel stations are surviving and have the ability to attract a large listenership to the AM band through their unique wide-area coverage. This is beneficial to the overall health of AM. In normal times and in times of disaster, the clear channel stations are a national resource providing needed news and advisories to large regional audiences. But what about the lower-powered regional stations and their quality? How can lower-powered stations command the public's heart into the next century?

An AM commentary from Donald G. Everist, Cohen, Dippell & Everist

The role that AM radio was required to fulfill in the past now serves to its detriment. For 30 years it was the only service and even regional stations were designed to reach out and serve wide areas, where today there is often a multitude of competitive FM services and in the future, possibly digital audio broadcasting. The technical standards that made possible such wide-area regional service sacrifice quality, the very essence of radio today. Therefore, for the current lower-powered regional station to compete, it must be redesigned to permit it to provide a higher field strength that meets the expectation of the listening public. To adopt forced reduction in radiation rights, as the FCC plans, when trying to implement improvements is counter-productive.

A further complication in predicting AM's future role is DAB. One of DAB's advertised advantages over FM is a claim of reduced multipath distortion. For 50 years, AM has provided service almost universally free of multipath.

Much debate has been directed to AM interstation interference. Many attribute this phenomenon to incorrect protection ratios and methodology. Interference from other stations is only a part of the equation because electrical interference from non-broadcast sources has become increasingly prevalent, in fact electrical interference is part of our way of life. Simply stated, the present FCC protection ratio and methodology are adequate, but what is inadequate is the signal strength to achieve comparability with FM quality. This requires that protected service contours for the regional station be redefined to provide a stronger signal. The 0.5 mV/m signal contour for the regional station is a relic from the past.

The population distribution of the U.S. has grown and shifted significantly since many AM stations began operating during the past 50 years. As a result, their service contours today are not always oriented for the most effective coverage. To overcome this, it is important for the FCC to adopt rules facilitating service realignment.

A majority of the lower-powered AM stations were assigned long before the rapid expansion of suburban areas. Based on the 1980 census, the Washington area has expanded by 400% since 1950. The 1990 census data will be even more dramatic. Few stations were designed to accommodate this population growth and shift. This new growth area, if not served, weakens the financial foundation of the AM services' ability to compete. Constrained listenership narrows that station's ability to offer quality programing. The third ingredient for AM radio to provide a comparable service is the receiver. This has been much discussed and studied and receiver makers need to produce an AM wide-band receiver with good fidelity. Such receivers will, to produce competitive high-quality sound, require higher signal strength. This is fundamental.

The public expects and deserves a high-quality signal. AM can deliver a competitive high-quality signal over a significant portion of its community if permitted to do so, and it is now time to introduce those changes. Rules that permit a higher signal strength, rules that foster, not hinder, improvements and well-designed radios to receive this high-quality signal are cornerstones for recovery. AM radio has had a rich history and with appropriate changes can enjoy a rich future. ■

The Hottest Talk in Town!

AM1320 WLEE

TALKRADIO

121 WYCK STREET • SUITE 300 • RICHMOND, VIRGINIA 23225 • (804) 232-0300
(804) 276-3804 Fax

FACSIMILE TRANSMITTAL SHEET

Date: 11-26-91 Time: 3:52 PM

To: DON/WARREN
C.D.E.
WASH DC

FAX number 202-898-0895
TEL number 202-783-0111

From: F.D BURKHARDT

Radio Station WLEE
121 Wyck Street, suite 300
Richmond, VA 23225

FAX number 804-276-3804
TEL number 804-232-0300

This transmission contains 4 pages including this page.

MESSAGE: FYI

Ed: 3 pages

Radiolocation Frequency Assignments

The 1610-1800 kHz band is filled with unusual sounds at night. Radio location frequency assignments include those used for survey and position fixing with equipment such as Raydist, Hydrotract, Cubic Argo and Decca Hi-Fix.

Many of these 1600-1700 kHz systems are being deactivated or moved to the 200-400 kHz range in preparation for the expansion of the 540-1600 kHz medium wave broadcast band.

Recognizing 1610-1800 kHz signal patterns:

- Decca Hi-Fix (one short, three long dashes per second)
- Cubic Argo (2-4 second burst of uneven chirps)
- Central American Aeronautical beacons (2-3 letter CW)
- Fishing beacons (one letter, three numbers CW)

Raydist Assignments

(Average center frequencies shown)

Ch	Mobile	Interrogator
A	3288.5	1643.5-1644.9
B	3290.5	1644.5-1645.9
C	3294.5	1646.5-1647.9
D	3296.5	1647.5-1648.9
E	3300.5	1649.5-1650.9
F	3306.5	1652.5-1653.9

Additional Raydist Frequencies

Mobile		Relay
3281	Alaska	1640.3
		1640.315/.725
		1648 Delaware Bay
3320.4	Coastline	1658.425
2396	USA except Alaska	1660.015
2456	Alaska and Great Lakes	
2510	USA except Alaska	
2848	Alaska	

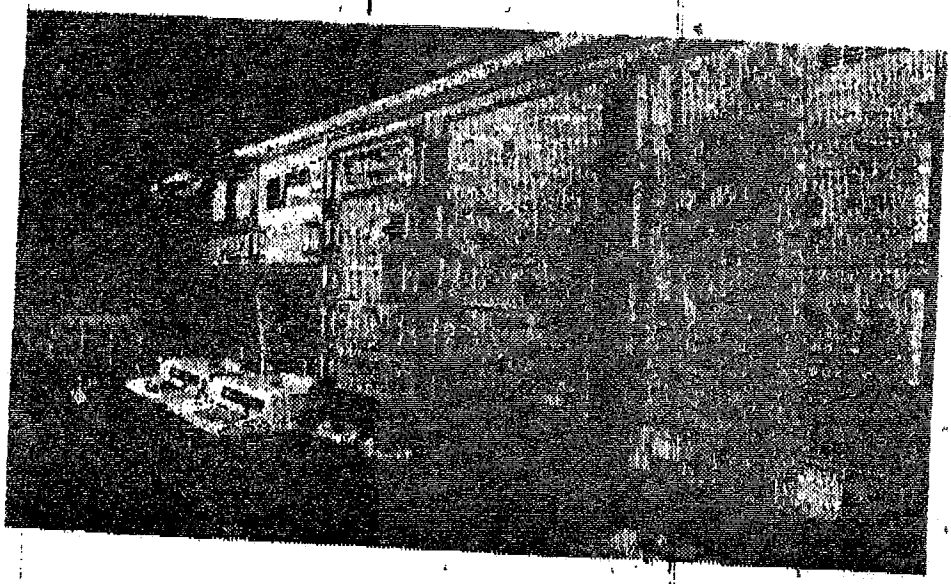
Hydrotrac/Argo Radiolocation Assignments

Freq	Comment
1618.5/1798.6	For lane ID
1619.64/1799.6	For lane ID
1643	US Coastline
1649	US Coastline
1718.59	US Coastline

Argo Assignments

Frequency Pairs

1643.0/1798.5	1643.7/1798.5
1649.0/1798.5	1644.7/1798.5
1653.0/1798.5	1646.7/1798.5
1648.0/1798.5	1647.7/1798.5
1643.0/1799.6	1649.7/1799.6
1649.0/1799.6	1652.7/1799.6
1653.0/1799.6	1658.4/1799.6
1648.0/1799.6	1660.0/1799.6



A well-equipped ship's radio room.

MARITIME

Canada

Cubic Argo

1610	1627	1644	1715.5	1762.5	1767.5
1628.5	1645	1716	1763	1769	
1616	1630	1646.7	1746.8	1764.5	1770
1618.6	1632	1648	1750	1764.8	1771
1620	1632.5	1673	1753	1765	1772
1622.9	1636.9	1674	1757	1765.6	1785
1624	1639	1705	1759	1766	1788
1626.9	1640	1714	1761.5	1766.5	

Limited Coastal Stations Nationwide

(Private correspondence for business and shipping; see following pages for frequencies)

Callsign	Location
KBQ	Miami, FL
KCQ	Galveston, TX
KDL	Houston, TX
KED	New Orleans, LA
KJG	New Orleans, LA
KKP	Seattle, WA
KKV	Piney Point, MD
KLB	Houston, TX
KMB	Houston, TX
KNB 304	Morgan City,LA
KEH	Houma, LA
KDR	St Louis, MO
KEC	New Orleans, LA
KFC	Morgan City, LA
KFN 540	Pt Arthur, TX
KHT	Cedar Rapids, IA
KFV	Palm Beach, FL
KHU	San Diego, CA
KRM	Pt Arthur, TX
KSW	Oakland, CA
KUR	Pt Arthur, TX
KUY	Pt Arthur, TX
KWU	Golden Meadows, LA
KXQ	Houston, TX
KXE	Des Allemands, LA
KYZ	Galveston, TX
KZN	Miami, FL
KZU	Harvey, LA
WBK	Pittsburgh, PA
WBQ	Bowling Green, KY
WDJ	Morgan City, LA
WDM	New Orleans, LA
WEC	Norfolk, VA
WFE	Houston, TX
WFX 605	Atlantic City, NJ
WGK	San Juan, PR
WIX	Lakin, WV
WJD	Tampa, FL
WJK	Jacksonville, FL
WJL	Narragansett, RI
WJU	Dravosburg, PA
WKC	St Petersburg, FL
WLN	San Juan, PR
WMP	W Palm Beach, FL
WNT	Greenville, MS
WPE	Jacksonville, FL
WRK	Morgan City, LA
WWB	St Louis, MO

Alaska

	Call	Coast	Ship
Ft.Nelson		5282.5	5009.0
		4798.5	5375.0
Hay River		5396.0	5856.0
Cold Bay	WGG53	2312.0	2134.0
Cordova	WDU26	2397.0	2237.0
Juneau	WGG58	2400.0	2240.0
Ketchikan	WGG56	2397.0	2237.0
Kodiak	WDU23	2309.0	2131.0
Nome	WGG55	2400.0	2240.0
Sitka	WDU29	2312.0	2134.0

Radio Beacons

1600-1800 kHz

kHz	ID	Location
1600	NHQ	Palmer Station, Antarctica
1602	LML	Lomalinda, Colombia
1610	TDA	Trinidad, Colombia
1615	MIL	Quintcemil, Peru
1615	NZ	Nadzab, Papua New Guinea
1616	OR	Ohure, New Zealand
1620	CEP	Concepcion, Bolivia
1623	FAM	Fazenda Amalia, Brazil
1623	GNY	Gurney,Papua New Guinea
1623	HUM	Humaita, Brazil
1623	PP	Oriximina, Brazil
1625	PAT	Pastaza, Ecuador
1627	NPA	Novo Paraiso, Brazil
1627	SAC	Sao Carlos, Brazil
1630	TM	Taumarunui, New Zealand
1632	OKT	Tabubil, Papua New Guinea
1635	LMC	Limoncocha, Ecuador
1635	ORI	Orito, Colombia
1638	URC	Urcos, Peru
1640	SJV	San Javier, Bolivia
1645	YPI	Yaupi, Ecuador
1650	SOT	Reyes, Bolivia
1655	RIO	Riobamba, Ecuador
1662	KUB	Kubuna, Papua New Guinea
1665	CBR	Cabo Norte, Brazil
1670	FU	Auckland, New Zealand

(END)

MARITIME

1670	1680	PAH	Prainha, Brazil
1670	1680	TIPM	Palmar Sur, Costa Rica
1675	1685	TSL	Talle Talle, Papua New Guinea
1682	1692	QQ	Canoas, Brazil
1685	1695	MER	Mercaderes, Colombia
1689	1699	MH	Mt Hagen, Papua New Guinea
1670	1690	CXS	Campo Dos Bugres, Brazil
1692	1692	KIU	Kiunga, Papua New Guinea
1715	1715	BAN	Banos, Ecuador
1715	1715	PP	Vitoria, Brazil
1745	1745	CAN	Canar, Ecuador

(Many of these are moving to the 200-400 kHz band)

Ship to Shore CW

Public Correspondence Stations (TELEX)

WCC Chatham, MA
4238 4268 4331 6333.5 6337 6376 8586 8630 12926.5 12961.5 13033.5 16933.2 16972 16973.45 22347.5 22348.5 22366.5 22518 22521

KPH San Francisco, CA
4247 8477.5 8618 8642 12808.5 13002 17016.5 17018.8 22479 22557

WPD Tampa, FL
4274 6365.5 8615.5 13051.5 17170.4

KLC Galveston, TX
4256 6369 8508 8668 13038 16871.3 22467

WNU Slidell, LA
4294 4310 6326.5 6389.65 8525 8570 12826.5 13011 16861.7 17117.6 22431 22456

WLO Mobile, AL
4342.65 6414.5 6416 8514 8658 12660 12897.5 13024.9 16997.6 17021.5 22485 22487

Marine Telex and Press

WCC Chatham, MA

Coast	Ship
4358.5	4177
6504.5	6266.5
8715	8354
13081.5	12501.5
17207.5	16670.5
22571.5	22202.5

KPH San Francisco, CA

Coast	Ship
4356	4176.5
6500.5	6262.5
8711	8350
13077.5	12497.5
17203.5	16666.5
22567.5	22198.5

KFS Palo Alto, CA

Frequencies	
2037.5	8558.4
2061.5	12695.5
4228	12844.5
4274	17026
6348	17184.8

WOM Ft. Lauderdale, FL

Coast	Ship
4588	4046
4635	4015
4532	4057
4529	4051
7398	7980.5
6365.5	22425	7395	7977.5
8444.5	22515	7392.5	7974.5
8445			

Scheveningen, Netherlands

Callsign	Coast	Ship
PCH52	4351.5	4172.0
PCH95	4250.0	4178.0
PCH53	6496.5	6258.5
PCH96	6404.0	6268.5
PCH4	8554.4	8298.1
PCH54	8713.0	8352.0
PCH5	12768.0	12521.5
PCH55	13077.0	12497.0
PCH92	17007.2	16698.0
PCH56	17217.5	16680.5
PCH98	22324.5	22226.0
CH H	1919.5	1972.5

Medium Frequency Coastal Stations (2 MHz)

NOTE: Many coastal stations are abandoning their 2 MHz services. The following list is an example of this transition and many frequencies are now inactive.

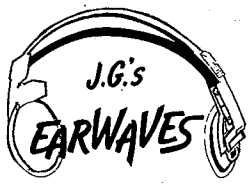
Callsign/Location	Coast	Ship
KOW Seattle, WA	2522	2126
KFX Astoria, OR	2442	2009
	2598	2206
KTJ Coos Bay, OR	2566	2031.5
KOE Eureka, CA	2506	2406
	2450	2366
KLH San Fran, CA	2506	2406
	2450	2003
KOD San Pedro, CA	2566	2009
	2598	2206
	2522	2126
	2466	2362
KBP Kahuku, Hawaii	2530	2134
KMV Agana, Guam	2506	2009
WOU Boston, MA	2506	2406
	2450	2366
	2566	2390
WOX New York, NY	2590	2196
	2522	2126
	2482	2382
WOO Ocean Gate, NJ	2558	2166
WAE Pt Harbor, NC	2638	2142
WGB Norfolk, VA	2450	2366
WJO Charleston, SC	2566	2390
WNJ Jacksonville, FL	2566	2390
WFA Tampa, FL	2550	2158
	2466	2009

The AM Game's New Rulebook

by Judith Gross

FALLS CHURCH, Va. Well, the world's longest **homework assignment** is finally done.

I'm talking about the **AM rules**, a.k.a. Docket **87-267**. Now, considering the first two digits in a **docket number** tell you the **year** it was first proposed, you can see **how long** we've been sitting on the edge of our seats waiting for it.



What this does is **revamp** the **technical criteria** for AM stations. And at least at first blush, it doesn't look to be as bad as the **gloom-and-doomsayers** thought it might be.

'Course, it did land with a great big "thud" on my desk (actually on my hand, ouch!) ... all **75 pages** of it.

First off, those curious about that extra **100 kHz** added to the **AM band** should not be too surprised to hear that the Commish wants to put AM stations **causing interference** up there. The word is **"migration"**—you know, as in what birds do this time of year.

The **Friendly Candy Company** wants to make sure nobody misconstrues this. Just because they've **limited the expansion** to AM licensees doesn't mean that they favor **existing licensees** over new entrants. Y'hear that, **DAB hopefuls**?

The FCC says don't take this as **future policy** or anything, but I'm sure the **lawyers will**, anyway, when it comes time to oppose entrants for **new services**.

Anyway, about all this **migrating**. They want the stations who **cause** the interference, not the stations who get **interfered with**, to make the move. They also want to help **daytimers**, so if no fulltime station asks for an expanded channel a daytimer will get **preference**.

The whole idea is to create a **new AM band** that is designed to keep interference nil. And the number of letters from stations **interested in moving** was surprisingly high.

And since the radios with the **extra channels** are already out there, we shouldn't have the **chicken and egg** "thing" (as our esteemed President might say).

Consolidation covers **voluntary agreements** between AMs to give tax credits for marginal stations which **cease operations**. And the FCC also is relaxing the **multiple ownership** rules.

But sorry, **no limits** to **simulcasting** an FM's programming on your AM. At least not for now. The Commissioners said they'll look that one over about **three years** from now.

As for **AM stereo**, the bugaboo that refuses to be quiet ... well, like the man said, there's **good news** and **bad news**. For stations migrating to the **new band**, yes, stereo operations will get a preference.

But for those of you who are staying put, it's still **voluntary**. So why don't more of you **raise your hand** and volunteer? I know, I know, it has something to do with **dollar signs**. And I sympathize. But geez.

Let's just say that if our **military** had to rely on the kind of **voluntary response** AM stereo has received, we'd be buying our oil from **Saddam** right now.

OK. On to the **technical** changes.

The Commish is **reclassifying** its AM stations to conform with **international rules**, and giving **Class Bs** (former IIs and IIIs) a boost to 50 kW.

It adopts a 2.0 mV/m protected contour for Class II and III at night, and does away with allowing the first local AM to get interference to the 1.0 mV/m contour.

Instead of a **16 dB adjacent channel** ratio for groundwave protection, the new rules make it **6 dB**, and also for first adjacent nighttime ratios. But forget any adjacent channel protection for **Class A's skywave**.

So if you're in **Schenectady** and having trouble getting **Fort Wayne** when you drive to the Tastee Freeze at night, you have to **learn to live with it**.

As to the infamous **"ratchet clause"**—the one requiring a **10 percent reduction in power** for stations that want to **make modifications**, there's been a sort of **compromise**. Using RSS calculations for nighttime, with 50 percent and 25 percent exclusion values, stations are divided into **high, medium** and **low** interferers.

If you're high, **no go** on the changes unless you **lower the power**. For the guys in the **middle**, you have to keep the interference **no worse** than it is now if you make changes, and for the **low folks**, you can make **modest changes** without worrying too much.

It's a beer, too.

And if you're a **new station**? You get to go **on the air** only if you qualify as "low." Now, there are a couple more **little things** here and there, but that's about the gist of it. Whew!

The question **now** is: Will all this **help AM**? Well, we'll have to **wait and see**, I suppose, but it won't happen **overnight**. I guess the best we can say is that it's a step in the **right direction**, away from interference, and redefines a traditionally **passive FCC** as taking a few **aggressive stands** to battle interference.

And, oh yes. **The freeze**. It's lifted as of the **effective date** of 87-267, which is after it gets published in the Federal Register. So we can stop **holding our breaths** now.

And, moving on to the **"D" word**: Now there are two.

I'm talking about **U.S.-developed DAB systems** for in-band which have been shown to **work very nicely**, thank you, at least in **demo form**.

Ron Strother demonstrated the **Lin Com** system for first adjacent FM DA

. . . the world's longest homework assignment is fina done.

for the **decision-makers** in Washing including the **DAB Task Force**. Soun good, as I tell you elsewhere in th sue.

So don't let 'em tell you **it can't b done**. The final battle will be betwe **IBOC** and **IBAC** (in-band on-chan and in-band adjacent channel), just watch.

Expect demos at the **NAB spring show** that are more than just, "see, I got it working!"

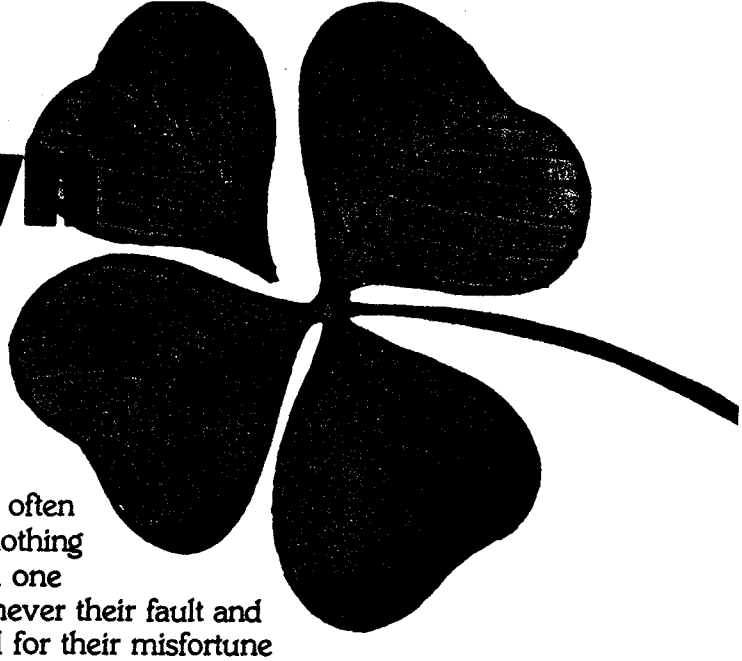
And if all this tech talk has made you **thirsty**, you might want to put your feet up and relax with a **brewski**. How about a **DAB**? Imported from (where else?) **Germany**, of course.

Take a look at the bottle if you think I'm **kidding**. It's **empty** you say? Well I guess it **didn't survive** *JG's* visit to the local chapter of the **DAB Drinking Society**.

I just started that club but **anyone** can join. If you can't beat 'em, drink 'em.

Have a juicy tidbit, wisecrack, rumor, innuendo or something silly to say? Spill those guts out to **Earwaves** *by faxing JG at 703-998-2966, writing to PO Box 1214, Falls Church, Va. 22041, calling 703-998-7600, or whispering to the wind. Maybe there's an* **RW** *mug in your future.*

make your own luck!



Have you even noticed how people often tell you how unlucky they are, nothing seems to go right and they go from one problem to another. Of course it's never their fault and some other party is usually blamed for their misfortune when all else fails. When they run out of people to blame the Government is the last recourse and it's all their fault. This type of person will usually wait for someone else to make their decisions for them and moan when they don't like the results.

Then there are workers!!
These people create their own luck. Always seeing opportunity when others only see problems. They work hard to achieve their goals because they have set them well in advance and know exactly where they are going. Any opportunity that comes there way they are prepared for and can take advantage of situations that can help their jobs, or themselves.

Because they think ahead they can anticipate problems and be prepared to use different options to achieve their aims. How many of our top sports people do you think were selected by putting their jersey numbers in a barrel and drawing them out — not one. They all earned their place in the team by hard training and a commitment to their goals. This is often misinterpreted as "luck" when in fact it has nothing whatsoever to do with it. You can apply the same rules to business, the companies that succeed usually have a good team of workers in the background who are prepared to work hard for the aims of their company and the harder they all work the more the company progresses. It is very hard to find well established companies who owe their success to a "Lucky Break".

So what does all this add up to — Get off your backside and get working. You will be amazed just how lucky you become and all your friends will want to know how you were given the Midas touch.

As for any association with the ~~printing~~ radio industry — well we couldn't think of anything that seemed appropriate except to say . . .

"The harder you work — the luckier you get."

11) COPY - 91FM OCTOBER 1991

ANN: And NOW.....we return to Sherwood Forest for....THE ADVENTURES OF ROBIN HOODED T SHIRT - The PRINCE OF T's!
(SFX: Forest, slow foresty toons/sticks)

FRIAR TUCK: Robin Hooded t-shirt!

ROBIN: Yes....Friar-Tuckya-t-shirt-in?

FRIAR TUCK: How come you're the only one who gets to wear a 91FM hooded T?
We're sick of wearing gree?

ROBIN: You mean, you'd ALL like 91FM t-shirts?

MERRRY MEN: SHER - WOULD!!!!!

ROBIN: You'd like T's, Hooded T's and long sleeve T's?

MERRY MEN: SHEEER - WOULD!!!!

ROBIN: Red, navy and white!...with the 91FM fluoro print!

MERRY MEN: SHEEER - WOULD!!!

ROBIN: Well you can't have them!

MERRY MEN: (disappointed) OHHHHH

ROBIN: Just kidding! Come on men, let's go to Brashs!

Written by Shaun O'Neill, Creative Writer, 91FM.

Radio is indeed theatre of the mind. We have to entertain.

Also promoting two Guy Fawkes events different sides of the City at the same time.

6) PROGRAMMES - 91FM OCTOBER 1991

Our drive announcer is leaving us. He has for the last two years been number one in our market, so we are sorry to see him go but he believes his new role is better and so it might be. He is going as P.D./Breakfast Host to a smaller market. We wish him well.

This vacancy has certainly seen a large number of applicants without any advertising. Word of mouth works, that's why Radio as a medium is so successful.

We are in no hurry to hire and will leave it for a month or two, as we have an excellent part-timer who finishes his Varsity exams in a week or two. There's nothing like some fresh blood.

One additional little extra in mornings at the moment is a call, post, fax in, name etc and reasons for a house spring clean. We have traded a number of house cleans to give away.

Survey out shortly, movie at 7.00.

7) SALES - 91FM OCTOBER 1991

October continues the now established pattern of retail fine, National down. Why? In National sales the client who previously bought $25,000 is now buying $5,000. November/December are looking more positive with Pepsi finally spending in New Zealand and Coke retaliating. Come on the Cola wars.

One positive this month, is that we gave the Police Department a $2,000 ad schedule to give away. A small electrical appliance firm won it. They felt the schedule was insufficient and ended up spending $10,000. Charity does pay!!! Plus they are giving us appliances to do the old 12 days of Christmas. Ideas certainly sell!! There's money sitting there with our name on, we just have to knock on the doors.

8) ENGINEERING - 91FM OCTOBER 1991

I reported last month our S.T.L. was going in. Well it didn't. Next week I'm told. This is Murphy's Law at its best! or worst!!

9) MISCELLANEOUS - 91FM OCTOBER 1991

10) PERSONALS - 91FM OCTOBER 1991

I'm running fast to catch up.

IDEA BANK REPORT 91FM OCTOBER 1991 - CONFIDENTIAL

1) STATION INFORMATION - 91FM OCTOBER 1991

Auckland's 91FM is New Zealand's first commercially warranted FM Station. 91FM went to air on the 26th April 1983. 91FM is a 50,000 watt 24 hour pure CHR Station. The surveyed catchment is 716,400 persons, with over 1,000,000 in our area. Staff size is 33 plus part-timers, ROS $135 per 30 seconds.

Idea Bank contact is General Manager, Larry Summerville
Phone number (0064 9) 486-0191 Fax (0064 9) 489-9119
Home number (0064 9) 480-9381

2) OPERATIONS - 91FM OCTOBER 1991

3) TOPIC OF THE MONTH - 91FM OCTOBER 1991

WBTO asks about controllers - At 91FM we don't have these gizzmos but at 2XS when I was there we put in a Sensaphone after hearing previously from Bill Payne of the product. It was good!!!

WTCH asks about one cost cutting measure. We put in a plain paper fax machine. The savings in expensive fax paper has been quite marked.

WNCX asks about growth? We see a no growth scenario in the new year, although I believe the recession talk is diminishing, there are more Stations coming into the marketplace.

4) IDEA OF THE MONTH - 91FM OCTOBER 1991

Look at your environment. How much junk is lying around your premises? Every six months I bring in the carpet cleaners, wash the walls, touch up the paint and throw out "junk". After almost 3 years the premises still look great!! It doesn't mean I have a tidy desk but the Station feels clean!! On-air we sound fresh!!

5) PROMOTIONS - 91FM OCTOBER 1991

The Free Money Song has worked well, we cut it back to three times a day or once per shift, 7am to 7pm. We played snippets each hour saying when it was heard in its entirety, the first caller would win $100 cash. The best aspect of the promotion was the trailer. The winners were brilliant and spliced together sounded bigger than big.

PROGRAMMING - Dirk Anthony: Well in this report I take the opportunity to thank Idea Bank members for your ideas and suggestions over the past two years that I have been Programme Director here at 7LA. My replacement is Mr. Bruce Neels who is coming to 7LA with excellent credentials and will be a valuable Idea Bank contributor. It is with sadness that I say farewell to 7LA which has been my home and family for the last seven years. I am moving on to 98FM in Dublin, Ireland. As they say, if you're going to make a move - make it a biggie!

PROMOTIONS - Dirk Anthony: As Promotions Director of 7LA I've always found it difficult to remember every single idea and how to in turn implement that idea for a promotion. So now I have added a word processing package to my music computer and all the ideas that I come up with are entered with the name and cost of the promotion, how the promotion should sound on air, how long it should go, and any other information that is required for that promotion. This can then be printed off in report form for anyone needed to put the promotion together for you for sales departments. This will also help the prop writer know exactly what they can and cannot offer the client when putting together a prop to sell a promotion. A copy can also be given to announcers so they have a full understanding of how the promotion runs, why and so forth if it is an on-air promotion. I currently have over 60 ideas listed yet to be itemised and reports printed. It really is interesting to note how often you will miss a particular idea because it just doesn't appear in front of your eyes.

PERSONALS - John Seaman:

WTRN - Gary Simpson: I like your idea of a master notebook. I have adopted it and have already found it extremely beneficial. The notebook and my Daytimers diary are my life support system.

COPY - Julia Roper: It's amazing how easy it is to latch onto a coinciding attraction! Take off of Robin Hood

Robin Hood style of music.

VO: (very dramatic) The scene is set ... in Sherwood Forest ...

(Accents preferably lower-class English)

V1: It's impossible, Little John - the forest is too overgrown! We can't get through!

LITTLE JOHN: (dramatic) There's only one man that can help us ...
(with reverb) **Robin Wood - Prince of Leaves ...**

V1: Er ... don't you mean Robin Hood?

LITTLE JOHN: (normal) No - we need Robin Wood of Tas Native Landscape. He guarantees the lowest prices on all landscape supplies. And if he's not the lowest - he'll match any price quoted.

VO: (normal) See Robin Wood now at Tas Native Landscape. Mowbray Street, just off Invermay Road.

V1: (in all seriousness) Does he wear green tights and a funny hat, too?

LAUNCESTON
7LA
1098 STEREO AM
TASMANIA, AUSTRALIA

CONFIDENTIAL TO IDEA BANK MEMBERS

General Manager : John Seaman
Address : 109 York Street, Launceston
Tasmania, Australia, 7250
Phone Number : (003) 31 4844
Fax Number : (003) 31 2547
Telex : 58515

Rates : Grid 1 Breakfast — $40.00
: Grid 1 R.O.S. — $35.00
STAFF : 25 Full Time

— ADULT CONTEMPORARY — 5000 WATTS — 1098 KHz.

OCTOBER 1991

TOPIC OF THE MONTH - John Seaman: "Do you use automatic transmitter controllers for unattended operation? Is your remote control hooked to a computer or telephone line? How do you handle the EBS requirements?

At 7LA our studio/transmitter remote control system is the Time and Frequency Technology model 7815. Both control and remote units are terminated to the line insulation transformers and the inter-connection of these is a dedicated two wire Telecom landline. Our transmitter site is 11.3km from our studio.

The TFT has a 15 channel direct control and status symbol which can give us the status of both transmitters, stereo lines, mono lines, an urgent alarm, as well as advising us if the diesel generator had been called into service because of a power failure.

In short, this system has worked efficiently for us.

"What is one cost cutting item you did this year?" We have had to institute several cost cutting measures this year. One of the most interesting was the decision to replace our journalist read and prepared news Saturday mornings with an announcer rip and read service. The audience reaction to the change - "nil". We obviously haven't lost a thing in news perception but have saved not an insignificant amount of money.

IDEA OF THE MONTH - John Seaman: "Six Month Planning Meeting". Last Saturday we conducted our biannual Six Month Planning Meeting. The sales team, promotion guy, Programme Director, my secretary, and other interested staff including our Accounts Supervisor and Schedules clerk, met out of station to plan promotional and other sales ideas for the period November 1991-May 1992. In March we will meet again to look at May - December 1992. We have done this exercise over the past four years and it has proven to be most beneficial. I would recommend the concept to any station wishing to improve it's promotional profile and involve all the staff in the exercise.

SALES SUCCESS OF THE MONTH - Ron Coenen: Newspaper organisations traditionally make megabucks from their classified ads. You too can make some money from these people. Recently our local newspaper approached us about advertising their "phone ad" service. Their office opened at 8.00 a.m. and their ads asked listeners to phone their phone ad girls now and place their classified ad. Early in the campaign, the first ads went to air at about 8.20 a.m. Immediate response. The newspaper have now requested preferred time placement prior to 8.00 a.m. so that their phone ad girls aren't sitting around idle for 20 minutes!!

GREEN SHEET

4AM hopes to gain a FM license to servie Cairns City next year. We are looking for any good quality second hand equipment such as Transmitters up to 2000 watts Aerials, Multiplecs, Exciters, Modulation Equipment, Studio to Transmitter Links 950 meg and above, Test Equipment.....whatever.

TRANSMITTER ONE	Up to 2000 watts
FREQUENCY	103.5 meg
POLARISATION	Mixed (circular)

TRANSMITTER TWO	Up to 200 watts
FREQUENCY	91.7
POLARISATION	Mixed

If anyone has any equipment or knows of a source please advise. We would be most grateful.

Thanks,

BRYAN HEALY

X. COMMERCIAL - OCTOBER - 1991

SFX: PHONE RINGING

SALESPERSON: HELLO, HOMESTEAD HARDWARE,

SFX: PHONE GARBLE

SALESPERSON: THIS IS PRESIDENT WHO?

SFX: PHONE GARBLE

SALESPERSON: OHH, PRESIDENT BUSH, OF THE UNITED STATES.

SFX: PHONE GARBLE

SALESPERSON: THERE'S A CRISIS AT THE WHITE HOUSE AND YOU NEED MY HELP - (GIVES A CHUCKLE) - WELL, IF I CAN , MR PRESIDENT

SFX: PHONE GARBLE

SALESPERSON: THE WHITE HOUSE NEEDS A NEW COAT OF PAINT? - WELL MR PRESIDENT, YOU'VE COME TO THE RIGHT PLACE.

SFX: PHONE GARBLE

SALESPERSON: OH YES SIR, RIGHT NOW AT HOMESTEAD HARDWARE, YOU CAN BUY ONE CAN OF PAINT AND GET ONE FREE.

SFX: PHONE GARBLE

SALESPERSON: WHATS THE DEAL SIR? - WELL YOU BUY ONE 10 LITRE CAN OF VINYL MATT OR VINYL SATIN FOR $75 AND GET A 4 LITRE CAN OF CEILING WHITE FREE OR BUY A 4 LITRE CAN OF VINYL MATT OR VINYL SATIN FOR $32 AND GET ONE LITRE OF CEILING WHITE FREE.

SFX: PHONE GARBLE

SALESPERSON: YES SIR, AT THAT PRICE YOU COULD AFFORD TO PAINT THE WHOLE WHITE HOUSE, WITHOUT A BUDGET DEFIC IT. - WHAT COLOUR WOULD YOU.....SFX: PHONE GARBLE.

SALESPERSON: WELL CERTAINLY WE'VE GOT WHITE.

SFX: PHONE GARBLE.

SALESPERSON: WELL, ER GOOD BLESS YOU TOO MR PRESIDENT.

SFX: PHONE GARBLE.

SALESPERSON: YOU WANT ME TO SAY HI TO BOB WHO?

SFX: PHONE GARBLE.

SALESPERSON: OH, BOB HAWKE!

VOICEOVER TAG: DON'T MISS THE HOMESTEAD HARDWARE PAINT SALE WITH STACKS OF STOREWIDE PAINT SAVINGS AND OUR BUY ONE GET ONE FREE

VII. SALES SUCCESS - OCTOBER 1991

(Submitted by Leigh Robinson)

We wrote 98% or our target in October, and I feel that we will have a good run into Christmas. Our sales success of the month was probably the signing up of a transport operater for a thousand dollar package for the 20th birthday of his business. I was only able to do this because I ran into him one day and we were talking about the ads I used to write for him (he was one of my first clients 20 years ago)

It was soon easy to turn nostalgia into the present, and once I wrote a couple of spec ads incorporating some of the same old lines, it was easy to screw him down to a one week birthday package, even if it did take eleven sales calls to do it!

The morale of the story is, when you are driving around keep your mind open to possibilities of birthday's, takeovers and other repeats of history that can be converted into on - air celebrations.
With the above package, we threw in a personalised tongue in cheek birthday call on the actual birth date of the business, which was a big hit.

VIII. TECHNICAL - NOVEMBER - 1991

(BY COURTESY OF MEDIAWEEK)

IN THE RACE: 2SM Sydney had its own racing car entry in the Bathurst 1,000 on Sunday. Car 52 was driven by John Cotter and Peter Doulman. During the race, they took calls from 2SM listeners. By pressing a button on the steering wheel, the driver was able to speak to the caller and hear back through his helmet. The system was designed for 2SM and tested at Eastern Creek racing circuit two weeks ago. Program director Ken sparkes, who was the station's racing commentator at Bathurst, said: "We worked hard at getting this two-way system ready and even installed a delay device. This is the first time this has been done anywhere".

IX. PERSONALS - OCTOBER 1991

MIKE GODINET C93FM: I like the sound of your battle truck...it sounds much more exciting than our "Mobile Studio". We are ready to replace our mobile studios, and would like to see a photo of the battle truck.

BOB PRICER WCLT: Excuse my ocker ignorance, but what is an O.E.S schedule?

PHIL WEINER WUPE: Regarding your observation in the September report "When I sit down to write this report all the great idea's I've wanted to write about are forgotten" I find it a good idea to keep a dictation machine or note pad by my side when reading Idea Bank reports, and I do my personals and other idea reminders on the spot day by day, rather than waiting until the once a month writing deadline.

MARK RAPLEY 2WG: You sure must have a great bunch of gamblers running the business enterprises in your city!

GEORGE ALLEN KLGA: Our thoughts are with you after your sad loss.

Best Wishes for Christmas selling. Leigh Robinson STATION MANAGER

B. "What and how do you pay on air talent to do a live remote broadcast?"

Most of our outside broadcast's are P.A jobs only with ocassional V.H.F two way radio crosses to the station, and we do not do anymore remotes as such, or very rarely. We simply pay the award rates.

IV. IDEA OF THE MONTH - NOVEMBER - 1991

(Submitted by Leigh Robinson)

We have had a lot of fun with this idea, a one week promotion to give away a defensive driving course at one of Autralia's leading acadamies which is visiting our area (Greg Hansford's motoring school). Our breakfast announcer invited listeners to nominate someone they felt needed to improve their driving, and they gave their reasons on air! Needless to say, we heard about some pretty crook drivers and we had listeners dobbing in work-mates, flat-mates etc, even one mother-in-law! The one day course providing car and lunch is valued at $95 and it proved to be a real contest prize with a difference plus we were seen to be encouraging better driving.

V. PROMOTIONS - NOVEMBER - 1991

(Submitted by Leigh Robinson)

Do any of you hold a fishing contest? In Australia, fishing is the second biggest hobby (after gardening), and we have alot of success with our annual Barra Bash. What is a Barra? I can hear some of our American friends saying. A Barra is a Barramundi, a delectable tropical fish, and here is what our local P & C association (who run the event for us) did this year to create more interest. You have probably all heard of those fishing contest where the tagged fish is virtually impossible to catch and there is some out of this world figure of money "dangled as bait" (excuse the pun) because there's hardly any chance of catching it. This was the problem we had over the years with Bill the Barra, a barramundi who was released in the Tinaroo dam on the last weekend of each October, with the "bait" being a brand new boat motor and trailer valued at $25,000 if you could catch him, well, nobody caught him, and fishermen were beginning to think the annual challenge of catching Bill the Barra was impossible. So, this year we've tagged ten Barramundi and the angler who brings in the biggest of the ten will win a boat and motor worth $1000 or $1000 cash this has been received alot better in the market place as the average fisherman thinks well I have a chance of catching one out of the ten, and although the prize is no where as big, human nature being what it is more people perceive that they can be successful. The fishing licenses have been selling like hot cakes and the P & C has been raising good money for its funds.

Whether you are located on the ocean, on a lake or only on a river, I urge you to run a fishing contest as a good annual promotion.

I. STATION INFORMATION - IDEA BANK - 1991

MANAGING DIRECTOR: BRYAN HEALY / STATION MANAGER: LEIGH ROBINSON
ADDRESS: P.O BOX 177, MAREEBA, NTH QLD AUSTRALIA 4880
PHONE NO:(070) 922233 / TELEX: 48932 / FAX NUMBER: (070) 922186
ZONE 1 RATES: 30 SECONDS = 40 X 30 SEC PACKAGE R.O.S $32 PER SPOT
TARGET $42 PER SPOT
STAFF: 19 FULL TIME PLUS PART TIMERS.

II. OPERATIONS - NOVEMBER - 1991

(Submitted by Leigh Robinson)

Alot of Idea Bank members are not paying enough attention to the section on copy each month. The idea of section ten is to give each other copy ideas and creative copy that we can adapt on our own stations. You will notice that alot of reports include drab copy that is of no use whatsoever outside its home town. Please take particular care to only include copy that can be adapted in other markets and for other clients. I don't mean that you need a dramatic award winning creative piece every month, as long as you include copy that might even just have a phrase or a line that can be lifted out and help someone else to get a sale in another market, thank you. Also, your copy must be alone on one page for easy filing.

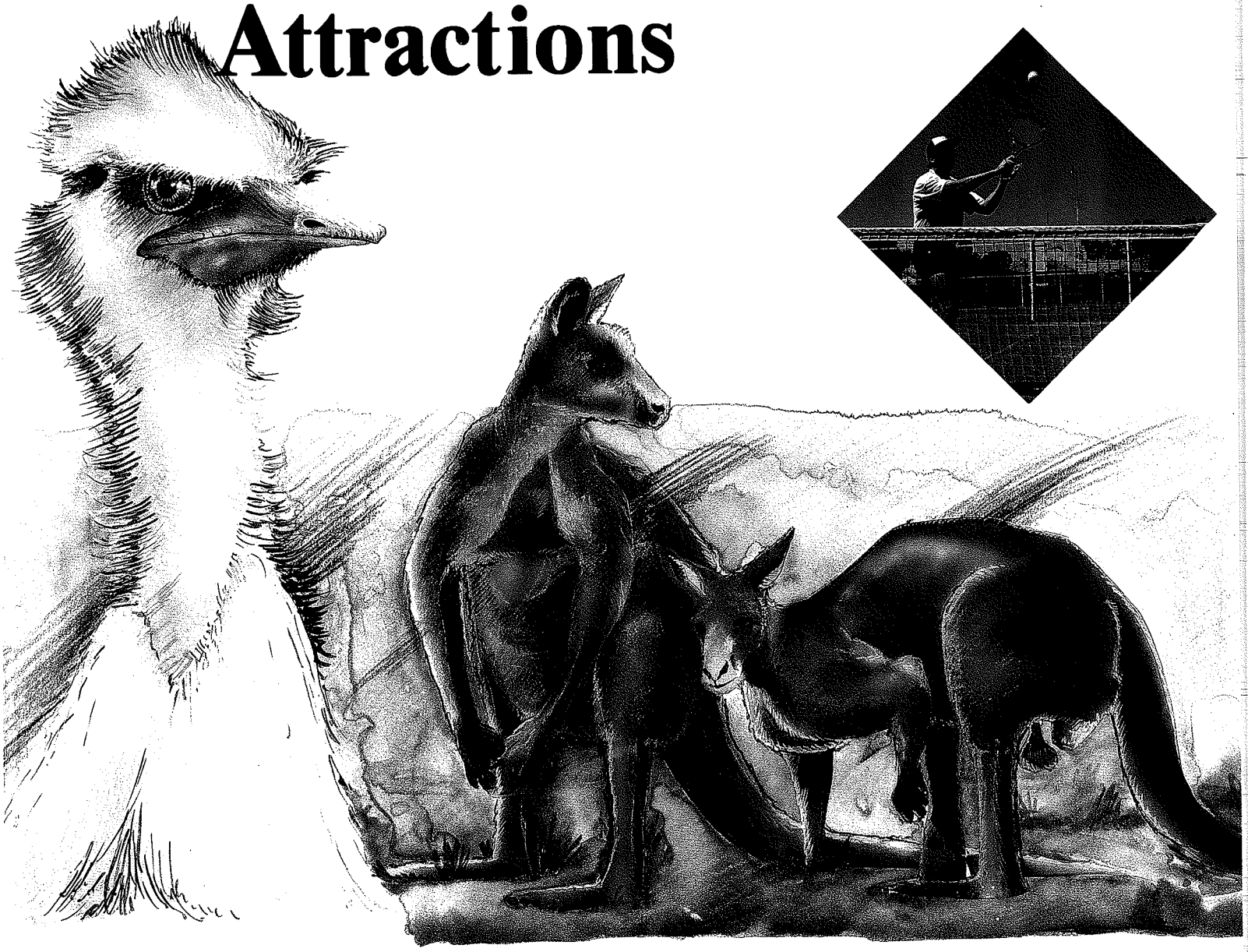
III. TOPIC OF THE MONTH - NOVEMBER - 1991

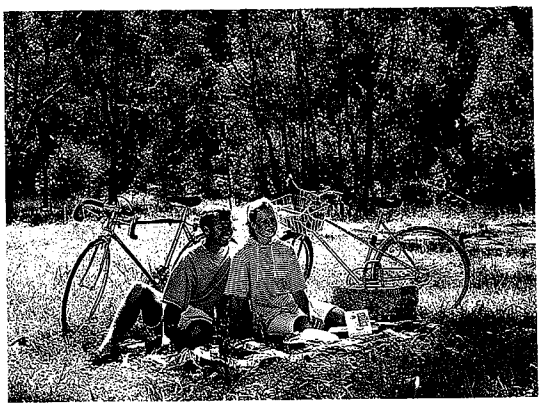
(Submitted by Leigh Robinson)

A. "Do you charge for station promotions which are fund raising efforts for non profit organisations?"

The only thing we can do to keep the wolves from the door is sell our advertising space, so I have no qualms about charging for fund raising promotions. However, I would like to qualify that by saying we do donate hundreds of thousands of dollars of air time and promotion annually to ensuring the success of such promotions, but the non profit organisations we deal with do understand that they have to pay something for the benefit of having their local radio station involved. We have various arrangements with various committee's, viz some committees prefer to find their own sponsors and pay us a bulk amount of money for a promotion. Other committee's prefer to give us names of prospects for us to canvass and raise sponsorship from. There are still other situations where a committee member walks around town with our rep jointly selling the promotion. In other words, there are many ways you can approach this situation and still come out on top as a generous community minded station. But, under no circumstances should you carry out a fund raising promotion absolutely free of charge, except in special circumstances for example fire, flood and cyclone appeals which have to be organised quickly following unpredictable acts of God.
As far as fund raising promotions which involve both a non profit organisation and a business, we have no set policy but negotiate each one individually. We do not let the business take unfair

Attractions





Riverina's tribute to the sheep industry. The centre itself will educate and entertain, while the Peppin Merino Memorial — a bronze effigy of a Merino Ram on the Cobb Highway — stands in memory of the contribution by the Peppins.

For a further taste of history, don't miss the Pioneer Gardens and Tourist Park — living history in itself. (See page 16.)

The region's abundant forest areas provide the perfect setting for more contemporary attractions like camping and bush walking. The closest is the Deniliquin Forest, which has plenty of picnic spots along the river and a wood barbecue. Short term camping is permitted. Imagine waking up in a red gum forest, to the sound of birdlife and the river at your doorstep. Information on forests in the region is available from the Tourist Information Centre.

For something completely different, how about discovering the world of the worm! Guided tours of the worm breeding process are conducted at the North Deni Worm Patch on request. There are also displays of live fish and gemstones. It's a great place to get all your fishing requirements, before trying your luck with the Murray Cod, Golden Perch (Yellowbelly) and Silver Perch. Other attractions along the river include Steven's Weir and Lawson's Syphon, which diverts the Mulwala Canal under the Edward River.

Don't wait any longer — come and "DO IT IN DENI".

Just a walk away, across the footbridge near the Tourist Information Centre is Deniliquin's Island Sanctuary. This unique and natural river red gum setting is always open. Visitors can see red and grey kangaroos, emus, native water rats, brush-tail possums, platypus and tortoises. Over eighty species of birds inhabit the area and most can be seen during a quiet walk. Bird seed is available from the tourist centre and there is a wood barbecue on the island.

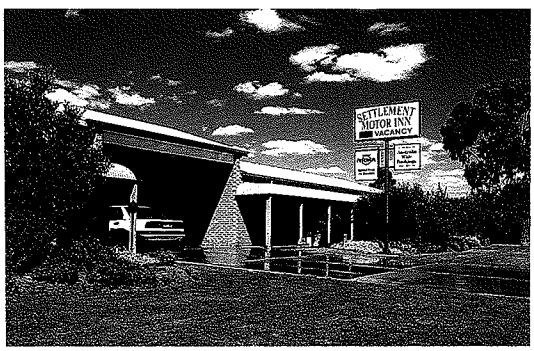
Motels

Whatever your accommodation needs, Deniliquin can meet them. The town has motels to suit every budget and requirement, caravan parks offering fully equipped units, van and camping sites and hotels offering bed and breakfast accommodation. Short term camping is also permitted in the forest areas. Wherever you choose to stay, you can be assured of friendly and personal attention, as we endeavour to make your stay in our town memorable.

RIVIANA MOTEL

N.R.M.A. 3 Diamond Rating.
Cnr. Crispe & Hetherington Streets,
Deniquin 2710. Phone: (058) 81 2033.
In a quiet location, within walking distance of the clubs and central shopping area, the Riviana Motel is set amidst picturesque gardens.
Comprising 20 comfortable ground floor units, we offer old fashioned country hospitality.
Facilities include: Pool, heated spa, BBQ, videos, direct dial phones, laundry and evening meals Monday - Thursday. Planned afternoon activities for children and baby sitting service.
Your hosts, Anne & Lindsay Dodsworth look forward to meeting you next time you are in Deniliquin.

RESERVATIONS: Toll free (008) 02 1937. (Map Ref: H7)



SETTLEMENT MOTOR INN

327-331 Victoria Street, Deniliquin 2710.
Fax: (058) 81 1364 **3½ Diamond Rating**
Mine Hosts: Geoff & Sue Murphy.
Situated 500m north of
NORTH DENILIQUIN POST OFFICE.
13 Units.
Ground floor accommodation, family units sleep 6 (2), honeymoon suite with spa (1), ensuites, reverse cycle air-conditioning, queen size beds, electric blankets, direct dial phones, TV, videos (fee), clock radios, tea making facilities, toasters, refrigerators, guest laundry, pool, dinner to units, BBQ, room service and courtesy car. Wheelchair access — independent. Hotel & restaurant 500m. 5am to 12 midnight service station opposite.

ENQUIRIES: Phone: (058) 81 3999. (Map Ref: D11)

DENILIQUIN MOTEL

286 Wick Street, Deniliquin 2710. **3 Diamond Rating**
16 modern spacious units with 2 family rooms. Direct dial phones. Air-conditioning and heating. Colour TV and video library. Swimming pool and barbecue. Wheel chair access. Evening meals available.
Situated opposite the Bowling Club and adjacent to the R.S.L. & Golf Course. Walk to the Edward River & town centre. Bus groups welcome.
Your hosts: Geoff & Pauline Lawrence.

ENQUIRIES: Phone (058) 81 1820. (Map Ref: H8)

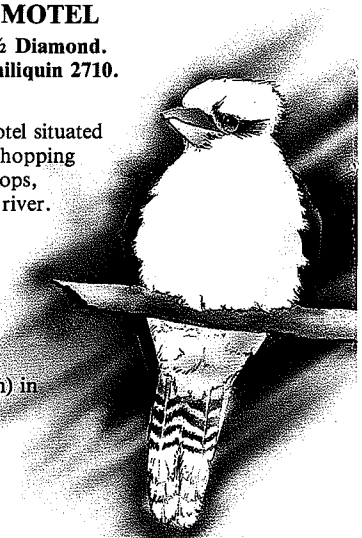
CENTREPOINT MOTEL

Est.: 1990. Rating: 3½ Diamond.
399 Cressy Street, Deniliquin 2710.
Fax: (058) 81 4755.

Deniliquin's newest Motel situated at the top end of the shopping centre. Walk to the shops, clubs, restaurants and river.

- ★ 16 Luxury Units
- ★ Family Units
- ★ Honeymoon Suite with twin spa
- ★ Disabled Unit
- ★ Guest Laundry
- ★ Spa Pool (10 person) in Gazebo Sunroom
- ★ Facsimile Service

ENQUIRIES:
Phone: (058) 81 3544.
(Map Ref: E7)



RADIO COPY

CLIENT	:	RICE MOTORS
PRODUCT	:	CAR
DURATION	:	30 SECONDS
START	:	
END	:	
KEY NO.	:	

TWO GUYS

A...THEY TELL ME YOU'RE GOING TO GET A NEW CAR

B...SHOPPING AROUND

A...YOU WANT TO CHECK THAT DEAL OUT RICE MOTORS HAVE ON LAZER

B...WHAT'S THAT?

A...IT'S THE LAZER RUNOUT...RICE MOTORS'LL LET YOU HAVE ONE WITH NO REPAYMENTS DUE FOR SIX MONTHS

B...YOU'RE JOKING!

A...NOPE. AND JUST THINK...GET A ZIPPY LAZER AND BE IN SPAIN BEFORE THEY MISS YOU

B...THAT WOULDN'T WORK MATE...I'D HAVE TO LEAVE MY LAZER BEHIND AND THEY'RE FRESH OUT OF RUN DOWN FARM HOUSES IN SPAIN ANYHOW

ANNOUNCER

GET IN FOR THE SUPER LAZER RUN OUT...NO REPAYMENTS FOR SIX MONTHS...
SEE RICE MOTORS, END STREET DENILIQUIN BEFORE THE END OF OCTOBER

PROGRAMMING CONTINUED

* If you happen to be a new opponent, don't make the mistake of basing your attack solely on research.

* Scrutinise your opponent's previous tactics in the market.

* Read interviews with them.

* Use disinformation and surprise.

ENGINEERING 1521QN NOVEMBER 1991

(submitted by Chief Engineer, John Goodall)

We would be interested in members experience with guyed mast maintenance for masts in inland rural localities. What length of time between repainting and guy tensioning or replacement?

SALES SUCCESS OF THE MONTH 1521QN NOVEMBER 1991

(submitted by Sales Manager David Glen)

One of the problems that we have (and regional radio generally) is the fact that rural advertisers...those who are targeting the man on the land...are unable to evaluate individual markets in terms of potential sales.

It seems that advertising agencies in the cities believe that because a station is in the country...they have an audience of farmers and the bigger the population the bigger the farming audience.

They cannot (most of them) relate crop production to radio station service areas and as a consequence our station and many others are missing out on valuable schedules to stations "less deserving".

To overcome this problem, we have purchased the agricultural statistics for all local government areas for states of Australia, which we will input into our computer. We have developed a spreadsheet and database in Lotus, that will allow us to compare crop types for any radio station we wish.

We will also be able to combine the stats for a number of radio stations and present a "single buy" option to advertisers.

The program allows us to select radio stations with production of any given commodity greater than any predetermined figure.

It will also determine the sales potential of the product...in Dollar terms, from which we can determine a potential advertising budget.

EXAMPLE

A few years ago a new sheep drench was launched and the manufacturers claimed that this product would be the main drench product for all sheep producers.

In some markets the sheep would be drenched four times annually, at a cost of 30cents per dose.

If the number of sheep in the market was say, 10 000 000 then sales potential would be (number of sheep X doses X cost of dose) $12 000 000.

The Advertising Budget should be 1.5% ...$180 000 for that market.

If the potential market share was only 50% the numbers would be adjusted accordingly.

We believe the system will assist Radio to generate new funds from traditional "Rural Newspaper" advertisers.

PROGRAMMING 1521QN NOVEMBER 1991

(submitted by Program Manager, Tony James)

I notice reading through a large number of Idea Bank Reports many of program sections have "nothing to report". Why is this, out of ideas? Don't want to let the opposition know what you're doing?

This month I thought I'd share a quick article I read a while back in a trade magazine, hope it's a thought provoker!

ANTICIPATING THE COMPETITION

* Too many Programming and marketing decisions only take into account the competitions expected immediate reaction.

* Correctly anticipating countermoves is not only based on instinct, but on knowing your opponent's style of competing.

* By cataloguing typical tactics used by a given company in a majority of markets, you can intelligently predict the company's behaviour in a new market.

IDEA OF THE MONTH 1521QN NOVEMBER 1991

Make sure your outside broadcast lives and has plenty of action.

One of our national sales representatives from Radio Airtime Sales commented that our outside broadcast was the best media broadcast at the Elmore Field Days last month.

Other radio stations and TV stations had "prettier" OB's in some cases but they were static. A display with a few signs and banners and nothing more. We were the only radio station actually doing a live broadcast, there were lots of give-aways, tic tac toe games and our personalities were there.

And in this day and age people still do want to meet the radio stations personalities.

Have plenty of activity and things to do at your OB and you'll get a large crowd of people at your OB and this helps give the appearance to a successful radio station.

TOPIC OF THE MONTH 1521QN NOVEMBER 1991

WCLT, Bob Pricer asks, "Do you charge for station promotions which are fund raising efforts for non-profit organisations? If so, do you always and whom do you charge? Do you have a policy stating the circumstances under which you will charge for a fund raising promotion which involves both a non-profit organisation and a business?

We evaluate each request for free promotional activity. If it is a "one off" fund raiser we sometimes do it free of charge. For example, last year a footballer became incapacitated as the result of an injury during a game. We organised a radio auction of club souvenirs from AFL clubs throughout Australia which raised $6 000 but we did not charge for our involvement.

However, if it is an annual event, say a Festival or Chamber of Commerce we do it for one third our normal rate.

If it involves both a business and a non-profit organisation we charge half price.

WOND, Dick Irland asks, "What and how do you pay on-air talent to do a live remote broadcast?"

If the live remote broadcast is during the week we don't pay anything if it is during the announcers normal working hours.

At weekends if it is charity work once again no payment. However if we are getting full price for the OB we would pay about $80 to $120.

PROMOTION OF THE MONTH 1521QN NOVEMBER 1991

We were approached by the Deniliquin Tourist Association to advertise in the Deniliquin Tourist Brochure.

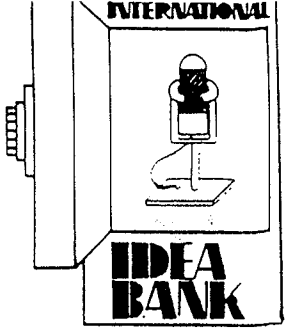
There are mutual benefits to be gained from our promotion of tourism and the brochure and our logo appearing in it.

The brochure is distributed several ways - tourist offices, motels, etc and is a high class product. I've included a page from the brochure with our logo on it. The 1521QN logo appears five times thoughout this brochure.

We have included the brochure with proposals that we send to clients and as the agreement to print the brochure is for three years there will be ongoing benefits.

CLASSIC HITS

1521QN



INTERNATIONAL BROADCASTING

IDEA BANK

CONFIDENTIAL REPORT

STATION INFORMATION 1521QN NOVEMBER 1991

The defined service area population is 46,877. However there are over 100,000 people in the total listening area.

Main towns are Deniliquin 8,000 and Echuca/Moama 11,500.

We are a border radio station covering the Southern part of New South Wales and Northern Victoria.

Main industries are Rural and Tourism.

Intense rural production includes sheep for meat, wool, dairy, beef cattle, pigs, wheat, rice and summer crops.

"Sunwhite Rice" is the largest rice mill in the Southern Hemisphere at Deniliquin, Echuca has "Yoplait" yoghurt.

Tourism is becoming increasingly important. QN country has almost 3,200 hours of sunshine a year, more sunshine than Surfers Paradise.

Competition is from five commercial radio stations and 3 television stations. All are within an eighty mile radius.

We are 2,000 watts omni directional with a Classic Hits format.

There are 13 Fulltime staff members, 5 programming, 4 sales, 1 news, 3 administration, There are 7 part-time staff members, 1 programming and 6 administration.

Rates; Grid one; $60 for 30's, $120 for 60's.

IDEA BANK CONTACT: DAVE ROBERTSON (General Manager)

TELEPHONE: 058 811 811 HOME PHONE NUMBER: 058 813 641

FAX NUMBER: 058 814 613

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TRANSCRIPT OF LUNCHEON MEETING OF THE

ASSOCIATION OF FEDERAL COMMUNICATIONS CONSULTING ENGINEERS

HELD THURSDAY, NOVEMBER 21, 1991

AT THE TOUCHDOWN CLUB, WASHINGTON, D.C.

TO DISCUSS THE NEW AM IMPROVEMENT RULES

Prepared by:

EVANS ASSOCIATES
Consulting Engineers
216 N. Green Bay Road
Thiensville, WI 53092

AFCCE Luncheon Meeting
November 21, 1991

"THE FCC'S NEW AM IMPROVEMENT RULES"

Guest Speakers:

William Hassinger, Assistant Chief for Engineering
Mass Media Bureau

Larry Olson, International Branch Chief
Policy and Rules Division, Mass Media Bureau

Moderator:

E. Noel Luddy, Program Chairman, AFCCE

NOEL LUDDY:

Well, today we have William Hassinger and Larry Olson of the Federal Communications Commission to discuss the new AM rules. First, I'd like to tell you a little bit about them, not too much, just enough.

Bill Hassinger joined the Commission in 1972 as a field engineer from the Los Angeles office. He moved to Washington in 1974 in the staff position of Radio Operator and Public Service Branch, at that time. From '76 to '80, he worked in the Enforcement Division of the Field Operations Bureau. In 1980, he was named to the position of Engineering Advisor to the Chief of the Mass Media Bureau, and in April '87, they call that now the Assistant Bureau Chief for Engineering.

Before joining the FCC, Bill received a Bachelor of Science degree in Economics from the University of Wisconsin, and after graduation, he served in the Navy, and while on active duty, he earned a master's degree in Electrical Engineering at the U.S. Naval postgraduate school.

Hassinger has served as advisor and member of the U.S. delegations in the AM broadcasting conference in Rio and the broadcasting satellite conference in Geneva, has helped organize and administer the Advisory Committee on Advanced Television Service, and is heavily involved in the Commission's inquiry into advanced television systems, the various proceedings affecting FM broadcasting and AM improvement, which we are going to discuss today.

Now, Larry joined the Commission in 1963, and has served in various engineering positions related to AM, FM and TV matters. He has held several advisory management positions, including Chief of the Aural Existing Facilities Branch, Chief of the AM Branch, and the last couple years, Chief of the International Branch of the Policy and Rules. Since joining Policy and Rules, he has been active in international matters, and has served as a delegate in several international conferences.

Recently, he has assisted the Commission's effort to improve the AM broadcast service, authoring portions of the 1986 AM Report, developing proposals to reform skywave and groundwave propagation procedures. He's currently contributing to the Commission's initiative to implement the expanded band. He is also working to develop a bilateral agreement with Canada and Mexico regarding border area use of the expanded band. Finally, he's currently assisting in preparations for WARC '92. Also, he's involved in HF, DAB and HDTV. What more could you ask.

Let me turn it over to Bill and Larry.

WILLIAM HASSINGER:

Two ground rules for this kind of a discussion. The AM item was only recently released and actually hasn't even made the Federal Register. Larry and I are prepared to discuss the item in general, to give you some thinking behind it, the reasoning. We are going to have to be careful, though, about getting into any kind of detailed responses to very particular questions. For one thing, we haven't gone through reconsideration, and things can change. People from the AM branch are not here, and they probably appreciate knowing if we were interpreting the rules that they have to apply. And inevitably in any rule making of this magnitude, there may be some differences between different sections that have to be ironed out, to be resolved, and some of those can only be done officially. We can't just wing it standing up here. And also some of them we simply haven't had time enough to think about. So there may be some questions or areas we're just simply not going to get into because we don't think it would be appropriate. That's the first ground rule. The second one is, I get the softball questions, Larry gets the hardball ones. Having said that, I'm going to limit myself to just a few remarks about the item, then turn it over to Larry, and then we can go into some questions.

The basic thrust of the item is to reduce interference and congestion. That's the position the Commission took. We weren't out there to handle individual problems, to make life better for any particular segment of the AM broadcast business. Our overall view is what's good for the service is good for individual stations over the long term, and that's the theme we tried to follow consistently in the item. And I know there is a strong difference of opinion on that subject, that some parties feel that more is better. More in the sense of more power and perhaps smaller service areas. We didn't agree with that, and our view is perhaps we need fewer stations and better service areas and less interference, and perhaps over time there will be opportunities for more power. Now that was the basic theme.

The second thing to keep in mind is there is no one part of the AM improvement package that stands out by itself as any kind of salvation for AM broadcasting. In fact, the government is not going to save AM broadcasting. Ultimately, it comes down to the broadcasters themselves, the community. What we've tried to do is put in place what we feel are the proper rules to allow AM broadcasting to get back on the proper road. And again, none of them stand out by themselves. We have made changes in the technical standards which we believe perhaps should have been implemented years ago, but that point in the right direction.

We're going to allow a modest number, and I use the word <u>modest</u> deliberately, of stations to move to the expanded band. Certainly when you have 5,000 existing AM stations, and you open up 10 new channels, you're not going to make a huge dent by letting some of those move to the 10 channels. But the

purpose, apart from trying to relieve some interference and congestion, is also to establish what we've called a model service in the expanded band; model in the sense of being able to demonstrate to the audience that this is what AM can sound like if it's done properly. And the way to do it is to try and give these stations decent service areas and a minimum of interference to deal with.

And the third area, and to me perhaps the most interesting one, even though there is not a lot of discussion on the item, is consolidation. And for the first time in this and the related rule making, the Commission is really saying it's willing to entertain suggestions from the industry to restructure itself. That is, stations will be able to negotiate with each other to make changes in their service so that perhaps some marginal stations can decide to go out of business - that they're simply not profitable or worthwhile, but in return other stations will be able to expand their service, or get less interference, or improve their power, or make needed changes. To me, the consolidation, perhaps, and I know I said no one part sticks out by itself, that might be the one that I, if I had to pick one, would say offers the best chance, because that, with the migration, and then applying the technical rules, seems to form a basis for broadcasters to do something to improve their own lot.

Now, I haven't said much about the receiver part because that's an area where the Commission doesn't feel it wants to step in and try to mandate standards, and I think for some good reasons. But it's interesting that shortly before the meeting, we had some visitors who showed us how much you could do by very simple changes in AM receivers, and to the extent any of us can either bring pressure or influence to bear on the receiver manufacturers, I think that could be a tremendous payoff for the AM industry. I mean, they were showing that a receiver built in 1929 sounded better than receivers built in the late 1960's. This radio was so old, it didn't look like a radio receiver - it looked like a piece of test equipment. And they also demonstrated that how, by making a simple change in the IF filter, almost a free change, you could make AM sound, I wouldn't say quite as good as FM, at least not on their demonstration, but certainly it opened up the fidelity and the quality of the sound. Anyway, on that one area our intent is to try and promote the work of the NAB and EIA with their NRSC-3 receiver - I guess they call it an AMAX receiver - to see what we can do to get the industry to do something. And there, the key thing might be to get Delco to do it, because if Delco makes changes, a lot of the Japanese manufacturers tend to look at what American manufacturers are doing, and then they follow along and adopt the same criteria.

Having said that much...Larry? You'd like to get into some parts.

LARRY OLSON:

This is obviously about the AM Report and Order, and I think that before we get into the specifics, it would be worthwhile to spend a couple minutes reviewing what happened and what got us here.

Very quickly, in terms of the AM service, I'm roughly 30 years into it in terms of working at the Commission, so I've experienced it myself both as a consumer or listener at home or in the automobile, the AM service. I've also seen how things have changed in terms of Commission rules and policies. Over the past decade or so, we've really noticed a great uprising in terms of the industry concerned about their own well being and their future. And because of that, and also recognizing as I say individually what is happening, we started over 10 years ago a major effort into looking at what can be done to try to solve some of the ills. Some of these we can act on, and some we can't. Obviously, we can deal with some of the technical issues, in fact all of the technical issues. We can deal with the policy issues too, but there are other issues we can't deal with, and Bill alluded to that earlier, and that is such as programming and some other factors like that, so a lot of what we've done today is just a supplement of what we hope and expect that the industry will try to do to solve their own problems.

Early on in the mid 80's, we prepared an AM report, which I believe most of you are aware of. From that, we spun off a number of rule making proceedings, and we decided at that time the best way to approach this was to recognize that the engineers themselves had been screaming about the technical deficiencies in AM as compared to FM. So by taking that approach, we decided to look at the things that we can attack and treat up front, and that is the technical criteria. So most of our rules that are rule making proceedings that we started off or initiated in the early stages, dealt with the technical aspects: skywave propagation, groundwave propagation, and so on. We have reached this point where we had the benefit of knowing that we have an additional 10 channels to use as a result of the 1988 Rio Conference, what we call the expanded band. And we got the idea, and again a lot of our ideas came from the industry and from the engineers themselves, and that is that interference is an extremely, in fact, it is probably the greatest harm from a technical aspect. We started analyzing and trying to decide what approach to take, and the Commission agreed that the first step was to use the expanded band. I'm going into this to lay a little bit of the groundwork, so that everybody can hopefully have a little better perspective of how the Report and Order was intended to come out to the industry, and that is to take some difficult questions that deal with technical issues, policy issues, and some of the other issues that we can't really control at this point, and try to provide the means for the industry to help solve the problems that are quite obvious and noticeable.

In the Report and Order itself, we broke it down into three basic sections, three of what we consider the most critical sections, and that is the technical standards section, the consolidation section, and then the migration section. We figured that these three areas would be the greatest possible solutions, at this point, to

the problems of AM. Not necessarily creating a turnaround overnight but potentially in the future, looking at 5-10 years or so down the road, realizing of course that quite a few people in the background were saying, "Why worry about AM?" Ten years from now it's going to be DAB or something of that sort, and our reaction to those types of comments is, well, we have to do what we can for the industry that's there right now, and we'll see what happens down the road.

Rather than going over each and every section or part of the Report and Order, I would just like to take the opportunity to point out what we felt were some of the keys, and this should be clearly understood by anybody reading the Report and Order and even planning to comment on it, and that is the key as we see it relates to how can we possibly make the AM service less subject to interference.

Over the years, and again being in the Commission for almost 30 years and then generally in broadcast matters of AM in particular for most of that time, we have seen the Commission's actions alone causing some problems to the industry, and that is because of special interest, waivers were granted, because of ideas, new policies that had been established, new rules had been created, so that consequently, we were providing more and more stations out there. A station in every community was a desired goal at one time, and so one of the real questions that we had in our mind in developing this Report and Order is, has that necessarily been good for the industry? It's been good for the one who wanted the station, who maybe wanted to get into the industry, but has it been good for the entire industry, the industry as a whole? We believe that most of the record has indicated that, that is not necessarily good. The additionals tations that are going on the air, obviously, as the engineers know, cause interference whether we define it on the basis of the rules and standards or not. There are still additional signals there that the receiver has to manipulate, has to manage. So there is the potential for additional interference each time we add a station.

In looking at this, we started looking at the parts of the standards that would be most attuned to maybe correcting this situation. Obviously, if we look at the protection criteria, the protection ratios, the protected contours, which are the key to allocation or assignment philosophy, we'd get a better handle on what we wanted or needed to do. And that gets basically to the thrust of what we consider the highlights to be, and that is, in the existing band itself, we have to look for some additional ways to determine or compute interference. We have to look for some adjustments or changes. We went out with the notice of proposed rule making last year. We received comments and we actually proposed some specific values. In that sense, we even made some major changes in terms of protection ratios. Instead of the first adjacent channel ratio of 0 dB, we were proposing a 16 dB, based again on the record presented at that time, as a result of our NOI.

We also took note of the very real difficulty of adjacent channel interference. Up to now, we have not considered adjacent channel interference at night from the skywave source to the groundwave signal. We had enough evidence presented

to us to indicate that that was in fact a real problem, and that it should be considered. The only question that remained from the bulk of the comments was how much the value should be.

Also there were considerable discussions, and in fact we had a prior rule making that covered the RSS methodology. As everyone knows, we used, up to this point, the 50% exclusion. There were sufficient comments to indicate that that was not doing the job. As you add and add more stations and more signals, the cumulative effect of those additional stations was actually diminishing the service of the other stations, although the rules did not recognize that as interference. We also had one basic premise in our item here, and that is that all signals are potential interferers, and that obviously there was some strong support for the concept of considering adjacent channel signals. So we developed, in our Notice of Proposed Rule Making, proposed rules to take into account this concept. We had proposed a much stricter threshold in the Notice then we finally put out in the Report and Order, and that is to go with a single signal, and I won't dwell on everything that was in the Notice other than to indicate that it was much stricter than what we finally came out with.

The result of our deliberations on the comments to the Notice indicated that, while we still felt that the 0% exclusion method was truly representative of the interference potential of stations, and that first adjacent channel signals should be considered for the nighttime interference situation, we realized that that may have been too radical a change for this service, and I emphasize that point because, as Bill and I have mentioned, we were looking for something that would improve the service, even if it took awhile. One thing that won't improve the service though, we felt, was something that totally stops the flow of applications, totally stops any potential changes or improvements that licensees or broadcasters have to make.

So in view of the comments, we did look for an appropriate compromise, or a reasonable solution, and that is probably one of the key points of the item, as we see it, and that is in the terms of the nighttime interference potential, there are basically three segments to the calculations. We retain the 50% exclusion principle, but only for coverage purposes. We now incorporate a 25% exclusion principle as an indicator of interference. This basically runs parallel, or at least it's in concert with some of the suggestions that were made in the earlier proceeding that dealt with the RSS concept. We then also incorporated the 0% exclusion principle, but only for the purpose of establishing what we term in the migration section, an improvement factor, because we felt like the 0% exclusion method is the best predictor or indicator of the actual interference. So to define which stations would be eligible or should be awarded the preference to migrate, we felt we should use the greatest indicator of interference.

At this point, we now have three levels: we have the 50%, the 25% and the 0% exclusion levels to predict or determine interference. That, as I say, we feel is extremely key to the whole item. Stations that fall into the 50% category can

make modifications, and the key here is if modifications are requested, they have to be associated with a 10% reduction in interference or signal in that direction, and only in that direction. The stations that fall in the range between 25% and 50% exclusion have no adjustment necessary - they are status quo, they can maintain their signal. Those below the 25% threshold may make changes that would raise the signal to another station but not above the 25% threshold. So that is the key to our nighttime interference calculations.

We also considered differences, as I mentioned earlier, in the protection ratios. They again have been drawn out of a reasonable bin. We had a very extreme case previously where we looked at a 0 dB first adjacent channel protection ratio which we found, based on the comments as I can recall, nobody ever believed or commented that that was the correct way. It was generally that it's there, it should be higher, the only question was what the value should be. Some of the estimates ranged from 6 dB to on up to 20 dB. We had proposed 16 dB and then, again based on our reservations, some of the analysis of the additional data, and also of recognition or an understanding that there just has to be a reasonable method that could work for the industry, we then established 6 dB as the best possible value.

Those are the key issues with respect to the improvement in the existing band. Now to add to that, we brought into use the expanded band, and we considered migration to be an add-on to any improvements in the existing band. Early on, we even considered the possibility of deciding which stations would be migrators. That would not be possible, so we determined that it should be on a voluntary basis. That is where we are right now, where we have to consider that with these 10 additional channels at the high end of the spectrum, what means are available to have the existing stations that are in the lower existing band migrate to the expanded band and yet produce some type of measurable improvement or gain in the lower band.

As a result of our internal processes, and also some of the comments we received from the outside, we developed what we termed an improvement factor. It takes into account the interference that is received by a station and also the service that the station provides, as a result of a particular station. When you determine this improvement factor, we perceive these to be in rank as we have shown in the report, as the ones that have the greatest potential for improvement in the lower band. Obviously, the higher the interference that is caused by a particular candidate to migrate vs. the lower interference that he receives, the greater the possibility that he should be a migrator. In those two situations, if they're normalized or equalized across the band, taking into account the different conductivities and propagation characteristics, we felt would be the true indicator or predictor.

Now in view of that, we felt that combining the original concepts, the technical improvements in the existing band, and migrating these types of stations, if they choose to, again recognizing that it's a voluntary basis, we felt that over a period of time, there could be some measurable improvement in the existing band.

Now, it's a balancing act, because the more stations you put in the expanded band, as we've already said earlier, every time you add a station, regardless what your standards are, there's additional limitations on the service of all the stations on the band. So we try to reach a compromise again, or a reasonable balance between improvement in the existing band and interference-free service in the expanded band.

At this point, that relates primarily to an allotment concept. We have decided that to achieve these goals that we are looking for in terms of model service, both in the existing band and the expanded band, that from an administrative standpoint and possibly for a long term technical interference-free basis standpoint, that the best way to approach it would be the allotment concept, where we space stations, where we have a recognizable distance separation between stations with a set standard for station parameters. In this case, we are looking at 1 KW at night with generally a quarter wave antenna omni, and 10 KW during the day, 10 KW being the limit of power as set by the Region 2, 1988 Rio Agreement.

So, in establishing these distances, and also the technical standards that we have developed, we then went to the task of creating an algorithm that would run this and take all the interests that is in the industry and take the filings, people who would file for these new slots in the expanded band, and look at them, evaluate the improvement factors, and then assign them to one of the ten channels in the expanded band. We do, at this point, have an algorithm, a computer routine, that works, and the results of that algorithm are attached to the Report and Order.

I think those are the key points with respect to the existing band, and with respect to the expanded band.

HASSINGER:

I want to just add a point out here that I made with the Commissioners, so that they fully understood. Where we talk about those who are in the highest zone, that is, those who cause interference and they are above the 50% exclusion line, and they seek to modify their facilities, the rule now says they are going to have to reduce that interference they cause by 10%. It applies to everybody. It applies to the old Class I's. It applies to the stations that were built in 1935. I made sure all the Commissioners understood this before they voted on it. So it is no longer going to be an easy thing for some of the older, larger stations that might seek to voluntarily modify their facilities. Most of them we wouldn't expect are going to, but if you have a station that owns some private property downtown in some large city, and feels that this property is worth a great deal of money and they'd like to move out to the suburbs and continue broadcasting, that's fine, but the fact that they have been doing it for 50 years or more isn't going to save them from

the rule that says if you want to make this modification, you're going to have to improve the situation for other stations, even though they accepted that interference willingly when they first came on the air.

Larry has pointed out to many people that of all the changes we've put in the rules, that's the only one that pushes in the direction of reducing interference. The others may encourage it, lead to it, help it, any of those things, but that one rule is the one that pushes stations in the direction of reducing interference. So that's something to keep in mind.

QUESTION & ANSWER PERIOD

QUESTIONER:

Just understand how pending applications are going to be handled, and I understand that this doesn't consider reconsiderations, etc. Pending applications for minor changes that haven't been acted on, at this point in time, do I read that to mean that they'll have 60 days to come into compliance?

HASSINGER:

The question has to do with applications (QUESTIONER: Applications that are pending) that are already on file? (Right, from the minor changes.) Prior to the freeze...is that what you mean?

OLSON:

Your question is, a minor change application that is currently pending...will it have to file within 60 days an amendment to reflect the new rules? (QUESTIONER: That's correct. That's my question.)

We said specifically that major change applications that are cut off need not file within 60 days. The intent was not to require minor change applications to file also, especially with minor change applications that had been pending for some time. But there is one catch there, and that is, in the AM branch there are current procedures as to how to treat minor change applications...when are they accepted, at grant or at filing, or what? So, I would not at this point try to prejudge what their characterization would be. But I would say that if they had been accepted, we did not intend for them to file amendments to comply with the updated rules.

HASSINGER:

I think if you'll take it as a general answer, recognizing that when we deal with the processing branch, then they say there are certain rules or laws we have to apply, the intent was the applications that were on file before we had the freeze, before this proceeding went to the rule making stage, should be processed under the old rules. Of course, we had the freeze which should have eliminated anything except those that had the special exclusions, and then the applications that come in after the freeze is lifted and the new rules are effective, will comply with the new rules. That's a simple way to break it down, but I know in the real world there will be some complications. We'll have to deal with those on a, perhaps, case-by-case basis.

QUESTIONER:

I spoke with the AM Branch processing people about that, and they confirmed for a minor mod that's been accepted, they didn't think it needed an amendment. They were not sure about minor mods that were still pending, which I think I had the only one in the bin. (OLSON: There shouldn't be, ma'am.)

QUESTIONER:

When do you expect publication of the docket in the Federal Register? Maybe you ought to make some comments on that.

OLSON:

Well, at this point the document itself is still in-house, the summary for the Federal Register. It's out of our division, out of the Bureau. But it's in-house in the normal review procedure before it's physically taken to the Federal Register site.

They have estimated - in fact, I got a reading on that this morning - that it's possible that it can go to the Federal Register as early as tomorrow, Friday [Nov. 22], in which case it may be published Wednesday [Nov.27], the day before Thanksgiving. That is the earliest, and that's the ideal situation. It could possible be considerably longer.

QUESTIONER:

Fairly simple question. Will the 10% interference reduction requirement be applied to applications merely seeking to augment the standard radiation pattern in order to accommodate measured field strengths in directional proofs?

HASSINGER:

We talked about that one before coming over here, and I think we agreed we'd like to duck that one. The reason is, we want to talk it over with the processing people and see what kind of interpretation would be best in the spirit of the item.

QUESTIONER:

Would you venture or hazard a guess as to how long after petitions are filed for migration that you'll have an allotment plan?

HASSINGER:

I'll give part of the answer, and then Larry can work on that, and one part is, how many people are going to apply? I think, clearly, if 200 come in, we're going to give you a different answer than if 2,000 come in. But we know the interest in it, and it's certainly going to get high priority treatment. Exactly how that will translate to time, I don't know. Larry, do you have some estimate?

OLSON:

After being directly involved in developing the algorithm, in working with our staff on that, I would have to say at this point that we're looking at potentially anywhere from three to four months, depending on how much of a response. Again, it depends what type of response we get from the windows.

There is one thing that I might note, and this is quite interesting for the engineers who maybe have tried to develop their own algorithm for this, is that the greater the interest, the quicker the allotment plan will be. In other words, if you get 500 stations coming in or 600 or 700, the computer algorithm can whip through those a lot quicker and even optimize them a lot quicker than if you only have a handful. So it's something that's contrary on first blush to what you would expect.

One thing I will mention right now, and this does deal with the time frame, and that is, we do have the algorithm that's been created and that actually produced the results that are attached to the Report and Order. There is the possibility, in fact, we expect to be adding the additional part of the algorithm to take into account the daytime groundwave calculations. We noted in the Report and Order that the results of the allocation plan do not reflect the daytime improvement factors, because that was not proposed, if you can recall, at the notice stage. So that is a little additional work that we're doing at the moment, but it will be patterned after the nighttime algorithm, but except taking into account, instead of

skywave propagation, the groundwave propagation. But that should be done in time, in fact that will be done before we open the window for filing.

HASSINGER:

Also, with regard to these migrators, it's our intention that, where possible, we're going to let them have more than one kilowatt of power at night. "Where possible" could be interpreted to mean those that are on a coast or near a coast, or where they can direct their signal from inland out to sea...We'd like to see, if possible, some of those stations going up to 10 KW at night, to give them some DA to protect other stations appropriately, so that those that are located in those positions, we hope to give a very appreciable nighttime service area. The ones that are inland are going to be pretty much confined to 1 KW.

QUESTIONER:

Have you made a determination yet how you're planning to define the 10% reduction in interference?

OLSON:

That's already defined. In other words, you reduce your radiation in the direction by 10%.

QUESTIONER:

Well, that leads to the next question. You said the Class I's are going to be required to do the same thing if they decide to make any modifications. How do you perceive doing that? Not moving, right? That's quite a disincentive for making any changes for a Class I-A station that's been operating at 50 KW non-directional for forty years. He would not move unless he were absolutely forced to move by his tower sinking into the swamp.

HASSINGER:

If that were the case, then we said we'll entertain a request for waivers for good cause.

QUESTIONER:

Would you consider case-by-case if he were destroyed?

HASSINGER:

Really good cause. Yes, if you lost a site, that's certainly good cause. We're not trying to be unduly rigid in this, but at least at the beginning we want to adopt a fairly hard line on this, and it's not going to be a matter of excusing one change after another. It's a serious rule. It's meant to drive down the interference that's causing...(QUESTIONER: Selling your site to a developer would not be good cause, I take it?)

QUESTIONER:

Is a petition pending with the Commission to simplify the proof of performance requirements for directional antennas? It seems to me that that would be appropriate to bring forward at this point because a lot of the cost in AM service is a directional proof of performance. Is there any change that might come to the surface?

OLSON:

You're asking if the joint petition filed by a number of consultants to request a reduction or a change in the proof of performance measurements. Okay, I checked this morning, as a matter of fact. That is under consideration, but at this point, the people that are working on it are not in a position to give us an estimate or time frame on that.

QUESTIONER:

Will the algorithm or the computer program eventually become available to the industry?

OLSON:

The question is, will the algorithm that we used to develop the allotment plan will become available to the industry? I can only give my personal answer. I don't know any of the legal ramifications at this point because we haven't discussed it, but I think personally it can be made available so that people can see exactly how things are being done. We tried to put the algorithm down in writing in as logical a sequence as possible so that it can be converted routinely to computer coding, and if you follow through the logical sequence of steps we put in writing and apply that or put that into computer coding, if you do it on one machine and we do it on the other, we should come up with, if not identical, then very similar answers. My answer personally is, I think we can.

HASSINGER:

Don't think of this algorithm as an optimizing one in the sense of one that tries to optimize the greatest number of stations automatically or that would optimize the greatest reduction in interference and such. Remember that the criteria, the way we set it up, that Larry's talked about, is you take the worst interferer and they go in first, and then you take the second worst one and they go in first, in the ranking list we've made up. That's a very mechanical process - you can do that by hand up to a certain point.

Really, where the computer helps is after you get down to, say, the 25th goes in but the 26th doesn't, the computer can quickly say, well let's start with the top person and let's try it with a different channel. We'll work on down and see if we can get Number 26 in by starting at a different point, and it will explore those, and then if 26 goes in, fine, then it continues, 27 and 28. Then maybe you get down to 35 and it doesn't fit in, the computer will start back again, and say let's start at a different beginning point and see if we can squeeze them in. As I understand it, it's sort of a very rote process but it's not the kind that might have come out of operations research where it gets into solving the interference, the reductions, and trying to optimize in that sense.

While we hadn't really talked about making it public, it's not a secret. We're not going to be able to say we've got a technique that we know, but we're not going to tell you. Life doesn't work that way. It's just more a matter of how we're going to make it available, I think, than anything else.

QUESTIONER:

There is an old processing policy that if you didn't move more than 2 miles, or 2 miles or less from the existing station, from the same facility, that you did not have to make a complete interference study. On that old policy basis, that would mean that they would not have to comply with the new rules as far as increasing radiation toward others. Is that policy still going to stand?

HASSINGER:

The question is, we had a staff level, possibly illegal policy, that allowed certain moves of under 2 miles could be made more or less automatically. As it turns out, it wasn't quite that open. It was for certain co-channel studies that we didn't require submissions, because of over the distances involved, a move of 2 miles didn't seem to change anything like RSS's and such, although adjacent channel relationships had to be examined. This thing is under advisement by the Chief of the Audio Services Division now. I'll give you an advance opinion of mine and that it's not going to last very long, if it's not gone already.

QUESTIONER:

If an allotment plan is adopted and published, would there be any automatic appeal, or would the FCC entertain any suggestions for alternative allotments?

HASSINGER:

The question is, when we publish the allotment plan, is there an opportunity for other parties to comment on it or object to it? The answer is, certainly, always. In fact, it's structured that way. We're going to first go out with the list of those arranged, right?...and what we feel is the order? Is that..(OLSON: That's right)...and then to allow people - really, a short time on this - 30 days to examine what we're calling the ranking factors.

What we're offering is the opportunity for people to comment that we may or may not have made an error someplace. That would not be the place to come up and say, "I object to the whole procedure." Presumably that would happen at recon...(OLSON: Or an omission) Yeah, that we omitted somebody or we didn't compute something properly, or didn't rank them. Then after we've gone through that and made the allotments where we designate who gets what frequency, parties can always come in and contest the Commission's decision.

QUESTIONER:

That would almost mean that you would have to have the algorithm try your own different starting points to see if somebody would fit, where they wouldn't under the plan that you adopt.

HASSINGER:

That, or you could use your <u>own</u> algorithm. Conceivably, if some party comes in and says, "I've worked through it and I can go down through your list and I'll get in five better people that you've missed, or one," obviously the Commission has to examine that.

QUESTIONER:

On the tax certificate, are they only available if one licensee surrendered his license, or are they also available if there is an agreement between two licensees whereby there is a reduction in interference with a modification application?

HASSINGER:

With the tax certificates, we tried to push the point that we'd like to issue them both for a reduction of interference and a complete cessation, which means going off the air. The lawyers pounced all over us on that, and as the rule is now, you only get a tax certificate if a station goes dark. They felt that in dealing with IRS - you understand of course, that we've got to deal with the IRS, not we, but the seller has to deal with the IRS - in that a good enough case could not be made that a reduction of interference constitutes a sale or transfer of property. The language in the statute is pretty explicit that way.

QUESTIONER:

A follow-up on that 10%. That 10% reduction applies nighttime only, not to the daytime operation?

OLSON:

That's correct. (QUESTIONER: It's hard for me personally...) Are you proposing it be applied daytime also?

QUESTIONER:

No, I'm asking a question... Are we doing away with nighttime clipping studies?

OLSON:

No. As far as the rules are concerned, we looking at just a change in the methodology. Now, the clippings studies as you know were done over the years up at least until the mid 70's, I believe, we came out with a policy that the Commission will not look precisely as to if there is any interference anywhere within the service area. But we've put the burden on the existing licensee to show us that there is interference. So we won't look at clipping studies. Nothing changes, in other words. The Commission will not look at clipping studies, but we'll expect the industry or existing stations to alert us to the interference of that nature.

QUESTIONER:

Once the station has made a modification which would cause it to have to comply with a 10% nighttime reduction, if 6 months or a year later, they want or need to make a second modification, do they have to pay the 10% penalty a second time?

HASSINGER:

And they have to pay the filing fee. If stations make multiple moves and they are still in that dreaded category of over the 50% exclusion, yes, they're going to have to reduce the interference.

QUESTIONER:

Doesn't that raise a question if you make a move and you do it in good faith, you don't get zoning, and you have to move again...

HASSINGER:

Request a waiver. Good cause.

QUESTIONER:

I'd like to know how the new rules are going to affect a Class IV, an old Class IV station, that's proposing to modify. There's a rule in the present FCC AM regulations, for the purposes of doing an interference study, the Class IV station, to compute interference given, you assume the station in question at 250 watts, and all others at a kilowatt, and for interference taken, you assume the station at a kilowatt and all others at 250 watts.

Under the new rules, is that going to change or are you going to have to assume that all stations are at a kilowatt, and will the Class IV's have to abide by the new adjacent channel interference criteria?

OLSON:

The question you are asking is, will there be any changes in our processing of Class IV applications in how we specify the protection relationship between stations at less than a kilowatt.

As I recall, we didn't make any changes as such in the actual application processing procedures with respect to Class IV's since they were a special or different category. And that would specifically relate to your question as to whether we assume that either they are all 250 watts or at a kilowatt. I can't say for certain because we had a number of people working on the various parts of the rules and I can't recall right now whether or not the actual rules themselves reflect that. We did not intend to make any changes in those procedures. The only changes we made were in terms of the calculation of the interference signals themselves, both daytime, and adjacent channel and nighttime skywave. The

only thing I can say at this point is, we'll take a look at it, but I don't think there are any changes. I'd have to go back and look at the rules specifically.

QUESTIONER:

Will the Class IV have to use the new adjacent channel interference ratio?

OLSON:

Yes.

HASSINGER:

Incidently, returning to this earlier question about if stations modify, what about the daytime 10% reduction. Although that's tied to RSS, the daytime means you got to comply with the adjacent channel rules. That's a factor that's going to come into play when you talk about your daytime moves.

QUESTIONER:

Class I stations that have to move. If they have a 10% power reduction, they're no longer a Class I, so, is the United States government going to sacrifice the Class I radio station and no longer protect the Class I? What's going to happen? How is it going to be protected. What happens to you at that point?

HASSINGER:

For one thing, they are notified as Class A's internationally. I don't propose to go around re-notifying them as something less. Second, as I recall, Class A at 50 KW does not have to be omnidirectional 50 KW to be a Class A.

QUESTIONER:

In Chicago, they're directional in all directions to protect everybody around them. A 10% power cut in the center of the country, there's only one thing you can do and that's to reduce the overall power.

HASSINGER:

Or stay where you are. (Ask for a good cause waiver.)

OLSON:

Do I detect an interest for modification for Class I stations? We haven't receive too many requests over the years.

HASSINGER:

You've raised a good point, though, in fact several of these questions have...In the proceeding, as I recall, there was a great deal of support from the Class I's for the direction we were going. Perhaps some of this wasn't considered by the Class I's at the time. If they want to raise these points during reconsideration, either seeking clarification or perhaps a change in the policy by the Commission, that would be an appropriate time to do it. I'm not suggesting there would be any kind of a change, but to the extent there is concern, this is the time to bring them up officially.

QUESTIONER:

With regard to daytime protection on the first adjacent, if you have existing interference under the new criteria, I assume that that would be grandfathered and that any change you make would take that existing interference into account, as long as you are not increasing it. You don't have to show no interference.

OLSON:

The question is, if you have existing daytime adjacent channel interference, if you maintain the same interference, you can make modifications. You can modify your operation as long as you do not increase the interference. Is that correct? (QUESTIONER: Right.)

Well, that's both correct and...well, there's an exception to that, and that is, when you're looking at whether there's an increase in interference, you have to compare apples to apples, and that means if there is existing interference, it has to be based on the current standards - and that is the 6 db standard - do you have adjacent channel interference? Will your modification increase it? So that's the yes. No, if you say, "I have predicted interference based on the old rules and here's my crosshatching. Based on the new rules, I show that there's no interference beyond that crosshatch area." That doesn't work.

HASSINGER:

Actually, what we found in practice...the easy cases where a station modifies, but it doesn't change the area or extent of interference at all, that's grandfathered

interference and, as a rule, that's an easy one to pass on. The more typical case is a station moves the area of interference, and those are the ones we can't give you an answer from here because they're looked at pretty much case by case. You see a station has made some kind of a sideways move where it'll offer an improvement in one area but make things worse elsewhere, and those have to be looked at from an original case-by-case public interest basis.

QUESTIONER:

In regards to daytime operations for Class II or III's, specifically DA's, but all of them that have pre-sunrise and post-sunset, suppose that under the auspices of an agreement in the industry, they decide to reduce interference and they fall under the dreaded above 50% category. How will this affect any pre-sunrise or post-sunset authority that they hold? Would this be automatically included or excluded if they are not a problem technically? How do you see that?

OLSON:

The question is, if one of the Class II or III stations that operate with extended hours, or pre-sunrise authority, if they make a modification, will they have to adjust their pre-sunrise operation, and post-sunset?

The answer to that is, yes. The rules are written now such that the Class II-S and III-S operations will have to take into account the new concepts, for instance, the 25% RSS exclusion, and even adjacent channel signals. But bringing in adjacent channel signals isn't necessarily good nor bad, because sometimes it's a counterbalance, so we don't know. Obviously, the 25% criteria makes it tighter. But the answer to that is, yes, the way the rules are written. In 73.99, it refers to and says, for calculation of interference, see 73.182, and that's where we point out that 50% for coverage, 25% for interference, 0% exclusion for improvement factors.

QUESTIONER:

Are you going to adjust all the post-sunset operations to agree with the new rules?

OLSON:

At this point we don't intend to have an across-the-board adjustment. We're assuming that, as stations modify, those authorities will be modified also.

QUESTIONER:

In several paragraphs you made in the Report and Order, they mentioned interference from all stations. Am I placing too much emphasize on the word all, or do you mean that we should include interference from Class II-S and III-S stations also, since they are on the air?

OLSON:

The questions is, should you include Class II-S and III-S stations in your interference calculations, in other words, to determine the protected contour or an RSS value for a fulltime or full-fledged station? The answer to that is no. For protection purposes, for fulltime stations, we look at only the interference relationship between fulltime stations. We exclude the II-S and III-S stations.

QUESTIONER:

Follow-up on an earlier matter of overlap-swapping, as I refer to it. I understand what you said earlier, this overlap-swapping exchange of existing overlap for new overlap area where there's no increase in total area, would be considered on a case-by-case basis. My reading the rules, there's really nothing in the rules that says that's the way you're going to do it. Is that a matter of policy or what is it? I think it's a good idea.

HASSINGER:

My answer is really derived from experience, and the way we seem to be handling these now where parties come in and want to modify their facility and they have what would otherwise be prohibited overlap, and they make a case that, although they're adjusting their facilities that, in fact, where they may offer a little more harm in one area, they're offering improvement elsewhere. Typically, the best case is where they can show that they're offering more of an improvement than the harm that they're causing.

There are two possibilities, one is where stations don't overlap. In that case, we try and adopt a fairly tough go, no-go criteria, that is, if there's no overlap, we don't want new overlap created. But once overlap exists, that is, you already are...the stations are tolerating interference, then if one of those seeks to modify, we have to look at a little more individualized, to see what the results of the modification are. Of course, if stations are moving further apart and improving the situation, there would be no reason in the world we wouldn't want to approve something like that even though there's still some overlap. As I tried to say, the hard cases where they do the sideways move and where they're shifting it - and sometimes you get bizarre results because of, like an AM with a changing ground

conductivity - you can get some unusual changes in the patterns because of that. My understanding of the processing - and, of course, this is probably why we should have somebody from processing here, although Larry did that many moons ago - they do look at those one by one...Larry, you want to comment on that?

OLSON:

I'd have to verify this, but I don't think we made any basic change in that rule that talks about net increase or net decrease. As I recall, I know in our discussions and so on and so forth, that we didn't propose to change that. I don't think it came out any different, so it's the same ground rules. You have to use the new standards to determine, first of all, whether there is existing overlap.

QUESTIONER:

I agree with you, there is no change in the text of the rules in regard to the overlap, but what I keyed on here was, you talked about looking at these on a case-by-case basis. That's something I am personally unaware of and I notice it's not spelled out anywhere that I know of. I agree with you, because we filed comments suggesting that no rule ?????? be permitted, period. That's our interest in it. It did seem like a change from what my experience has been.

HASSINGER:

It's not a rule but it's a practice that enables you to deal with reality, and I believe it's gone on, as far as I know, for some time. Otherwise, if any two stations had any kind of overlap at all, there's no rule that quite governs that, and there would be paralysis if they wanted to modify. It's going to arise more and more because of adjacent channel stations that presently put their contours right up to each other under the old rules of 0 dB, you're now going to find they have prohibited overlap under the 6 dB criteria. Well, obviously if they are going to make some modifications, we're going to have to look and see what the effect is.

QUESTIONER:

Does that mean we should forget the note on 73.37? The note that says that you can shift an area of overlap providing you do not increase. If you decrease it in one spot and you increase it in another, provided the overall doesn't change. That's what the note says.

OLSON:

That's what I was referring to. That did not change. I think what we're talking about now is, do we look at these on an ad hoc or individual basis and decide whether it's waiverable, and I think at this point, we had no intention of changing the policy or the practice or the application as a rule, over the last ten or more years. The fact of the matter is, is that quite often, in fact in every case where an application comes in and it has to take advantage of that note to 73.37, it is looked at individually. If there is overlap shown, and consequently the engineer on the processing line, or in the AM branch, will take a look at that and in many cases will break out the planimeter and determine the square miles and the net increase or decrease.

But at the same time, he will look to see whether there is anything that is usual or abnormal and the Commission, obviously, if it sees that there is something pronounced - and I think this is what Bill might have been talking about - if the area of reduced service happens to be an entire community and the area of increased service is a desert, then there may be some reason for the Commission to raise a question as to that. I'm not saying we would, but I think this is in terms of thinking, the thought or the concept, I think, that's what we're looking at. And it goes the other way too. If the applicant wants to make a showing that it's much better this way than the other way, then the possibility that even a waiver could be granted, if the net increased. And we've had those before. We've had requests for waivers in those types of situations. The increased overlap is over a desert, a swamp, and so on and so forth. Reduction in interference happens to be in a desirable area where there are a lot of people, listeners.

QUESTIONER:

Sometimes it's difficult to explain a new policy to a client who filed the application.

QUESTIONER:

How would you characterize the rule as impacting synchronous operations, Cuban interference stations receiving Cuban interference, and Puerto Rican stations. Did you do any studies? I'm talking about the top part - the technical rules there.

HASSINGER:

In regard to synchronous operation, the Commission says they're going to look at those one by one. In effect, they are authorized on a waiver basis. I'm not sure what I could say that would be useful here. (QUESTIONER: There is no change in current policy, then?) Well, policy is to look at them case-by-case.

The Cuban interference...we've issued temporary authority to allow some stations to attempt to recover lost service because of Cuban interference. This one I feel I'm on a little shaky ground saying something definitive. Let me just give you a general impression, and that is that those stations, and we're talking, really, south Florida, that feel that they could qualify under the rules as they're coming out now, for a higher power level than they would have under their old permanent license, they could file for it, just like anybody else in the country could. So if a station has found that they're getting along fine on 30 KW, you know as a whole regional, and that it could be permanent under our current rules, then I guess the idea is to come in and file for it.

QUESTIONER:

Puerto Rico...did you study the impact as far as your new rules, because they're a little bit away from the Continental U.S.?

OLSON:

I can't recall anything right now specifically addressed to Puerto Rico, other than one of the realizations that, when we re-classified the Class III's to Class B, there is the ability under the rules themselves, the power ceiling goes up to 50 KW in that case. But that's true throughout the Continental U.S., Alaska, Hawaii and the Caribbean. So I think in that respect, that is one impact, it's a positive impact, that there's an option or flexibility anywhere, including Puerto Rico. If your question is in terms of the actual interference...domestic interference, or relationships between Puerto Rico and anybody else?

QUESTIONER:

Well, the fact is that Puerto Rico probably suffers more interference from outside sources than we have in the Continental U.S., except for, maybe, southern Florida. Does it fit in any different category, or is it going to be tested under the new rules in the same way?

HASSINGER:

The question is a little hard to answer. To the extent that they are getting international interference, that's covered by our international agreements, so that hasn't changed. The item did not focus on any particular rules for Puerto Rico, not that I'm aware of or that I recall. I don't think there's any attempt to focus on them as special. If you're aware of a particular problem that the rules would create for Puerto Rico, bring it to our attention, or reconsideration.

QUESTIONER:

There is an item regarding increases for regional stations toward the Dominican Republic and the Bahamas, that there would be no power increase permitted beyond 5 KW in their direction. The question came up as to whether or not...what the basis for the 5 KW was. Why not just protection under the agreement...how do you determine what the actual radiation limit should be?

OLSON:

The question as I understand it is, are there any changes to the note that is in the rules regarding the protection to the Dominican Republic and the Bahamas pending the termination of NARBA. Is that correct?

Right now it's in there, in fact, it's in the existing rules as a 5 KW limitation. If I'm not mistaken, basically what's in the new rules is a carry-over from the old rules. The only thing I can add to that is that we are hopeful, in fact we have been trying to meet with the Bahamas, maybe in January...we are trying to reach some agreement with the Bahamas and the Dominican Republic, but primarily with the Bahamas, so that we can terminate our relationship with them with respect to NARBA so that we don't have that international bar to the higher power levels.

By the way, I might add that the note that's in there now that permits an increase above 5 KW but yet - that is contrary to the international agreement and so we had to do some sweet talk with the State Department to allow this to be done initially - but with the caveat that we're still maintaining the protection level to what the power ceiling was in the international agreement. So the fact of the matter is, if we can resolve that, then the power ceiling goes off completely and we don't have to worry about it. So we <u>are</u> working on that.

QUESTIONER:

The 10% nighttime reduction, that doesn't apply to foreign stations, just domestic? If a U.S. station enters the 50% RSS of a foreign station, whether Canadian, Mexican, are you requiring him to reduce 10% also?

OLSON:

Requiring the <u>Canadian</u> to reduce it? (QUESTIONER: No.) No, the answer is <u>no</u>.

HASSINGER:

That doesn't trouble us, no. That's governed by international agreements.

INDEX OF ITEMS DISCUSSED

BURKHARDT MONITORING SERVICE
P.O. Box 1411
Glen Allen, Virginia 23060
(804) 261-1800

date: November 13, 1991
to: King Hall, FCC Signal Analysis
from: Ed Burkhardt

(1) Please let me know what steps should be taken the next time I note CFJR, 830 kHz, Brockville, ONT operating day mode at night?

(2) The 1500.145 kHz interference continues.

Direccion Nacional de Comunicaciones
Apartado 10-006
1000 San Jose, Costa Rica

(3) Would you please assist in identification of the following night signals, nominal frequencies given, those above 1700 are of adjacent channel concern:

1610 kHz	radio Anguilla (BWI) (known station)
1610.036	unidentified station
1620	travelers radio Virginia Beach, VA
1620	unidentified station -18Hz
1639	beacon: RD
1647	Rad Nav
1659	beacon: 9W337
1660	beacon: 9W040
1666	3 seperate beacons: B161, 9W116 and 9W346
1670	2 seperate beacons: KA90370 and 9W350
1674	slow-slow dashes (possible faulty keyed beacon)
1681.6	sharp pulses every 0.76 seconds ← 79 pulses / minute
1683	2 seperate beacons: B448 and 9W263
1684.9	MCW beacon: MER E or E MER
1685	2 seperate beacons: B490 and 9W265
1688	beacon: A334
1692	beacon: B187
1692	beacon: KA90237 (bearing 56 or 236 deg)
1695	beacon: B500
1696	beacon: A326
1698	beacon: B193
1699.960	MCW beacon: CPA
1700	multiplex
1706	multiplex
1717.4	Rad Nav
1719.2	FSK
1721.4	Rad Nav
1723.8	Rad Nav
1724.6	Rad Nav

~ 10 uV/m 6:30 AM

~ 20 uV/m 6:30 AM

✓ bcc: Don Everist

morrowmass *n* [ME *morwemasse*, fr. *morwe* morning + *masse* mass] *obs* : a mass said early in the morning : daily mass
mors *pl of* MOR
mor·sal \'mȯrsəl\ *adj* [L *morsus* bite + E *-al*] : OCCLUSAL
¹morse \'mȯ(ə)rs, 'mȯ(ə)s\ *n* -s [ME *mors*, fr. MF, morse, bite, fr. OF, bite] : a clasp or brooch used to fasten a cope
²morse \"\ *n* -s [Lapp *morša*] : WALRUS
³morse \"\ *n* -s *often cap* [after Samuel F. B. *Morse* †1872] : MORSE CODE
⁴morse \"\ *vb* -ED/-ING/-S *vt* : to send Morse code : communicate by means of Morse code ~ *vt* : to signal to by means of Morse code : TELEGRAPH
morse code *n, usu cap M* [after Samuel F. B. *Morse* †1872 Am. artist and inventor] : either of two codes in which letters of the alphabet, numbers, and other symbols are represented by

MORSE CODE

AMERICAN MORSE CODE[1]

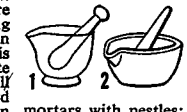
A ·−	K −·−	U ··−	5 ·····
B −···	L ·−··	V ···−	6 −····
C −·−·	M −−	W ·−−	7 −−···
D −··	N −·	X −··−	8 −−−··
E ·	O −−−	Y −·−−	9 −−−−·
F ··−·	P ·−−·	Z −−··	0 −−−−−
G −−·	Q −−·−	1 ·−−−−	, (comma) −·−·−−
H ····	R ·−·	2 ··−−−	. ·−·−·−
I ··	S ···	3 ···−−	&· ···
J ·−−−	T −	4 ····−	

INTERNATIONAL CODE[2]

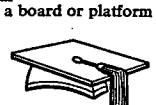
A ·−	N −·	Á ·−−·−	8 −−−··
B −···	O −−−	Ä ·−·−	9 −−−−·
C −·−·	P ·−−·	É ··−··	0 −−−−−
D −··	Q −−·−	Ñ −−·−−	, (comma) −−··−−
E ·	R ·−·	Ö −−−·	. ·−·−·−
F ··−·	S ···	Ü ··−−	? ··−−··
G −−·	T −	1 ·−−−−	; −·−·−·
H ····	U ··−	2 ··−−−	: −−−···
I ··	V ···−	3 ···−−	' (apostrophe) ·−−−−·
J ·−−−	W ·−−	4 ····−	- (hyphen) −····−
K −·−	X −··−	5 ·····	/ −··−·
L ·−··	Y −·−−	6 −····	parenthesis −·−−·−
M −−	Z −−··	7 −−···	underline ··−−·−

[1]Formerly used on landlines in the U.S. and Canada; now largely out of use.
[2]Often called the continental code; a modification of this code, with dots only, is used on ocean cables.

dots and dashes or long and short sounds and used for transmitting messages by audible or visual signals (as by telegraphy, wigwag, or light flashes)
¹mor·sel \'mȯrsəl, 'mȯ(ə)s-\ *n* -s [ME, fr. OF, fr. *mors* bite (fr. L *morsus*, fr. *morsus*, past part. of *mordēre* to bite) + *-el* — more at SMART] **1 a** : a small piece or quantity of food : BITE ⟨the multitude was kept quiet by the ~s of meat which were flung to it —J.A.Froude⟩ ⟨deftly ladled a spoonful of this and a ~ of that into the . . . skillet —Elinor Wylie⟩ ⟨a bitter ~ to swallow⟩ **b** : a small meal : SNACK ⟨came home, ate his ~ quickly, and left⟩ **2** : a small quantity of something : a little piece or portion : FRAGMENT ⟨that ~ of information lay dormant for over a hundred years —C.C.Furnas⟩ ⟨his last remaining ~ of self-respect⟩ ⟨a tiny ~ of land lost in the ocean⟩ **3 a** : a tasty dish : TIDBIT ⟨such exotic ~s as Japanese frog legs, Alaskan king crabs, Indian pompano —*Time*⟩ ⟨sitting apart munching his own delectable ~s —C.S.Kilby⟩ **b** : something delectable and pleasing ⟨the girl . . . is young and very pretty . . . a ~ worth a little lordly condescension —Eric Blom⟩ ⟨his shorter piano pieces include some choice ~s⟩ **4** : a small or negligible person ⟨this ancient ~ —Shak.⟩
²morsel \"\ *vt* **morseled** *or* **morselled; morseled** *or* **morselled; morseling** *or* **morselling; morsels** : to divide into or apportion in small pieces
morse lamp *n, usu cap M* : a lamp used for signaling by flashes corresponding to the dashes and dots of the Morse code
mor·sing \'mȯrsiŋ\ *n* -s [fr. gerund of obs. Sc *mors* to grease, prime (a firearm), modif. of MF *amorcer*, *amorsser* to prime (a firearm), bait, fr. *amorce*, *amorse* bait, fr. OF, fr. *amorse*, fem. of *amors*, past part. of *amordre* to bite, fr. L *admordēre*, fr. *ad-* + *mordēre* to bite] *archaic Scot* : PRIMING
mor·sure \'mȯr,shůr\ *n* -s [ME, fr. MF, fr. LL *morsura*, fr. L *morsus*, past part. of *mordēre* to bite] *archaic* : BITE
¹mort \'mȯ(ə)rt, 'mȯ(ə)t, *usu* -d·+V\ *n* -s [prob. alter. (influenced by MF *mort* death, fr. L *mort-*, *mors*) of ME *mot* note of a horn, fr. MF, note of a horn, word, saying — more at MOT] **1** : a note sounded on a hunting horn when a deer is killed ⟨the hunters, with their horns and voices, whooping and blowing a ~ —Sir Walter Scott⟩ **2** : the act of putting to death : KILLING ⟨~ of the English stag —Glenway Wescott⟩
²mort \"\ *n* -s [origin unknown] **1** *archaic* : GIRL, WOMAN ⟨male gypsies all, not a ~ among them —Ben Jonson⟩ **2** *archaic* : MISTRESS, SWEETHEART
³mort \'mȯrt\ *n* -s [prob. alter. of obs. E *morkin* animal that has died a natural death, fr. ME *mortkyn*, prob. modif. (influenced by ME *-kyn*, *-kin* -kin) of MF *morticine* carrion, fr. LL *morticina*, fr. L, fem. of *morticinus* dead of natural causes, fr. *mort-*, *mors* death] *chiefly Scot* : the skin or fleece of a sheep that has died a natural death
⁴mort \"\ *n* -s [origin unknown] *dial Eng* : the fat of a hog from which lard is made : LARD
⁵mort \'mȯ(ə)rt, 'mȯ(ə)t, *usu* -d·+V\ *n* -s [F or L; F, fr. *mort*, adj., dead, fr. L *mortuus*, past part. of *mori* to die] : a dead body : CORPSE ⟨unburied ~ —Henry James †1916⟩
⁶mort \"\ *n* -s [prob. back-formation fr. *¹mortal*] : a great quantity or number : a great deal : ABUNDANCE ⟨had a ~ of things to be thankful for —Ellen Glasgow⟩ ⟨after the ~ of trouble I took —James Still⟩
mor·ta·cious \mȯr'tāshəs\ *adv* [prob. fr. *⁶mort* + *-acious* (as in *audacious*)] *dial Eng* : EXTREMELY, TERRIBLY
mor·ta·del·la \,mȯ(r)d·ə'delə\ *n* -s [It, irreg. fr. L *murtatum* sausage seasoned with myrtle berries, fr. *murtus* myrtle + *-atum* -ate — more at MYRTLE] : a sausage made of chopped beef, pork, and pork fat, seasoned with pepper and garlic, stuffed into large casings, cooked, and smoked
¹mor·tal \'mȯr|d·ᵊl, 'mȯ(ə)|, |t·ᵊl\ *adj* [ME, mortal, deadly, subject to death, fr. MF *mortal*, *mortel*, fr. L *mortalis* subject to death, mortal, fr. *mort-*, *mors* death + *-alis* -al; akin to L *mori* to die — more at MURDER] **1** : destructive to life : causing or capable of causing death : FATAL ⟨a ~ disease⟩ ⟨a ~ blow⟩ ⟨a ~ wound⟩ ⟨~ danger⟩ ⟨a new fact that was ~ to his theory⟩ **2** : subject to death : destined to die ⟨all men are ~⟩ ⟨attended all that was ~ of their benefactor to the funeral pyre —J.G. Frazer⟩ ⟨these pictures have a very ~ look, but the poems refuse to fade —*N. Y. Herald Tribune Bk. Rev.*⟩ **3 a** : aiming at extermination : fought to the death ⟨living in one of those periods of history when wars are frequent and ~ —John Strachey⟩ ⟨won a ~ contest against a totalitarian system which ~ crime —Sir Winston Churchill⟩ — see MORTAL SIN **7** : of, relating to, or connected with death ⟨the ~ moment when the bombers, committed to their target, are locked defenseless in their courses —*Time*⟩ ⟨fell with a scream of ~ agony —F.V.W.Mason⟩ **8** : humanly conceivable or possible : EARTHLY ⟨every ~ thing the heart could wish for —A.E. Coppard⟩ ⟨done all you asked — every ~ thing —Michael McLaverty⟩ **9** *archaic* : marked by many deaths ⟨a very sickly and ~ autumn —John Evelyn⟩ **10** : long and wearisome : TEDIOUS ⟨here they lay for four ~ hours, their faces close to the muddy water —E.T.Brown⟩ ⟨three ~ hours — a hundred and eighty minutes — ticked off with jerky precision —Ida Treat⟩ **11** *chiefly Scot* : DEAD-DRUNK **syn** see DEADLY
²mortal \"\ *adv* [ME, fr. *mortal*, adj.] *chiefly dial* : MORTALLY
³mortal \"\ *n* -s [*¹mortal*] **1** *obs* : something that is mortal : a mortal substance ⟨this corruptible must put on incorruption, and this ~ must put on immortality —1 Cor 15:53 (AV)⟩ **2** : one who is mortal : a human being ⟨what fools these ~s be —Shak.⟩ ⟨parallels are risky matters between ~s —Claudia Cassidy⟩ **3** : INDIVIDUAL, PERSON ⟨just the same careless ~ as to small properties that he used to be —Rachel Henning⟩
mor·tal·ism \-ᵊl,izəm\ *n* -s *usu cap* : the doctrine that the soul is mortal
mor·tal·ist \-ᵊlȯst\ *n* -s *usu cap* : one who holds the soul to be mortal; *specif* : a member of a 17th century English sect believing that the soul and body perished together at death and would be resurrected together
mor·tal·i·ty \mȯ(r)'talәd·ē, -ətē, -i\ *n* -ES [ME *mortalitee*, fr. MF *mortalité*, fr. L *mortalitat-*, *mortalitas*, fr. *mortalis* mortal + *-tat-*, *-tas* -ty] **1** : the quality or state of being mortal ⟨salvation is the rescue of men from the ~ which sin has brought upon them —K.S.Latourette⟩ **2** : the death of large numbers : a heavy loss of life (as by war or disease) ⟨the Black Death of 1348 caused a terrible ~ throughout Europe⟩ ⟨those rabbits, frogs, hedgehogs and caterpillars which suffer such ~ on our country roads —*Punch*⟩ **3** *archaic* : DEATH ⟨here on my knee I beg ~ —Shak.⟩ **4** : the human race : MANKIND ⟨take these tears, ~'s relief —Alexander Pope⟩ **5 a** : the whole sum or number of deaths in a given time or a given community ⟨many died and the ~ among the children mounted daily —*Amer. Guide Series: Minn.*⟩ **b** : the proportion of deaths to population or to a specific number of the population : DEATH RATE ⟨for years has had the lowest general ~ and infant death rates —V.G.Heiser⟩ — opposed to *fertility* **c** : the number lost or the rate of loss or failure in a field of human endeavor (as business or education) ⟨the ~ among college students⟩ ⟨the ~ rate of small businesses⟩
mortality table *n* : an actuarial table based upon statistical records of mortality over a number of years (as a decade) giving the rate of death per 1000 in each age group — called also *life table*; see COMBINED EXPERIENCE TABLE, COMMISSIONERS STANDARD ORDINARY TABLE
mor·tal·ize \'mȯ(r)d·ᵊl,īz\ *vt* -ED/-ING/-S : to make mortal : treat as mortal ⟨contemporary art ~s the immortals, stripping them of everything divine and noble —P.A.Sorokin⟩
mor·tal·ly \'mȯ(r)d·ᵊlē, -(r)t·ᵊl-, -ᵊli\ *adv* [ME, fr. *¹mortal* + *-ly*] **1** : in a deadly or fatal manner : to the point of death ⟨his colonel and lieutenant colonel were both ~ wounded —J.D.Hicks⟩ **2** : to an extreme degree : GRIEVOUSLY, INTENSELY ⟨millions have come out of the war lost souls . . . still ~ afraid —F.S.Kinney⟩ ⟨~ hates and fears a fall in farm income —*Time*⟩ **3** : by way of mortal sin ⟨the souls of those who have sinned ~ —R.M.French⟩ **4** : AWFULLY, EXTREMELY ⟨all novelists and dramatists without genius . . . are usually being ~ serious about middle-class people entangled by Fate —F.A.Swinnerton⟩
mortal mind *n, Christian Science* : a belief that life, substance, and intelligence are in and of matter : ILLUSION — opposed to *Spirit*
mortal sin *n* [ME *mortal synne*] *Roman Catholicism* : a serious sin or a lesser sin aggravated by circumstances committed willfully and viewed as involving spiritual death and loss of divine grace — contrasted with *venial sin*
¹mor·tar \'mȯr|d·ər, 'mȯ(ə)|d·ə(r, |tə-\ *n* -s [ME *morter*, fr. OE *mortere* & MF *mortier*, fr. L *mortarium* mortar, vessel in which substances are pounded or rubbed, plastic building material that hardens and is used in masonry, trough in which mortar is mixed; akin to Gk *marainein* to waste away — more at SMART] **1 a** : a small usu. bowl-shaped vessel made of a hard material (as porcelain or brass) in which substances are pounded or rubbed with a pestle **b** : a large cast-iron receptacle in which ore is crushed in a stamp mill **2** *archaic* **a** : a bowl of oil with a floating wick **b** : a thick candle **3** [MF *mortier* muzzle-loading cannon having a tube short in relation to its caliber, vessel in which substances are pounded or rubbed] **a** : a muzzle-loading cannon having either a rifled or smooth bore and a tube short in relation to its caliber that is used to throw projectiles with low muzzle velocities at high angles **b** : any of several similar firing devices used for various purposes (as to throw a lifeline or to fire pyrotechnic bombs or shells)


mortars with pestles: *1* glass, *2* porcelain

²mortar \"\ *vb* -ED/-ING/-S *vt* : to direct mortar fire upon or to hit with mortar shells ⟨the enemy . . . was ~*ing* a crossroads behind our lines and interfering with our movements —C.C.Wertenbaker⟩ ⟨the leading tank . . . radioed it had been ~*ed* —*Life*⟩ ~ *vi* : to fire mortars ⟨can expect the ~*ing* to begin any minute —Ned Calmer⟩
³mortar \"\ *n* -s [ME *morter*, fr. OF *mortier*, fr. L *mortarium*] **1** : a plastic building material that hardens and is used in masonry or plastering; *esp* : a mixture of cement, lime, or gypsum plaster with sand and water that is used in either the plastic or hardened state ⟨the masons are calling for ~ —Walt Whitman⟩ **2** : something that binds or holds together ⟨our dreams are built solidly with the ~ of our toil and blood —Stuart Cloete⟩ ⟨moral and spiritual values . . . the ~ which holds together the other educational ingredients —*Educational and Psychological Measurement*⟩
⁴mor·tar \'mȯrtər\ *vb* -ED/-ING/-S [ME *morteren*, fr. *morter*, n.] *vt* : to plaster or make fast with mortar ~ *vi*, *dial Eng* : to tramp about esp. with mud or dirt on one's feet ⟨keep ~*in*' in and out, in and out, for everlastin' trampin' through —H.E. Bates⟩
mortar bed *n* **1** : a shallow box or receptacle in which mortar is mixed **2** : a layer of sand or gravel cemented by calcium carbonate and resembling hardened mortar
mortarboard \'ˈˌˌ,ˌ\ *n* **1 a** : HAWK 3 **b** : a board or platform about 3 feet square for holding mortar **2** : an academic cap consisting of a closely fitting headpiece surmounted by a broad flat projecting square top ⟨the shape of the hat as stiff and uncoquettish as a ~ —Frances G. Patton⟩ ⟨the candidates for honorary degrees, now sitting fussing nervously with their gowns and ~ hats —*Harper's*⟩


mortarboard 2

mortar boat *n* : a boat adapted to carrying a mortar or mortars for bombarding
mor·tar·less \'mȯ(r)d·ə(r)ləs\ *adj* : having or using no mortar ⟨a ~ stone foundation⟩
mor·tar·man \'ˌˌmən\ *n, pl* **mortarmen** : a member of a crew that fires a mortar
mortarware \'ˌˌ,ˌ\ *n* [*mortar* + *ware*] : a hard stoneware

(assumed) obs. F *mort d'échine*, lit., death of the spine, fr. MF *mort de eschine*] *Scot* : GLANDERS
¹mort·gage \'mȯrgij, 'mȯ(ə)g-, -gēj\ *n* -s [ME *morgage*, fr. MF, fr. OF, fr. *mort* dead (fr. L *mortuus*, past part. of *mori* to die) + *gage* security, gage — more at MURDER, GAGE] **1 a** : a conveyance of property upon condition (as security for the payment of a debt or the performance of a duty) that operates as a lien or charge securing the payment of the money or the performance of an obligation so that the mortgagee may under certain conditions take possession and may foreclose the property upon default, that becomes void upon payment or performance according to stipulated terms, and that leaves possession with the mortgagor and subjects the mortgagee's defeasible estate in the land to the equity of redemption and foreclosure rules of the equity courts — see CHATTEL MORTGAGE, EQUITABLE MORTGAGE, FIRST MORTGAGE, INSTALLMENT MORTGAGE, JUNIOR MORTGAGE, LEASEHOLD MORTGAGE, PARTICIPATING MORTGAGE, PURCHASE-MONEY MORTGAGE, SECOND MORTGAGE, TRUST MORTGAGE; compare ANTICHRESIS, EQUITY OF REDEMPTION, GAGE, HYPOTHEC, LIVING PLEDGE, PLEDGE **b** : the instrument by which a mortgage conveyance is made, the state of the property so conveyed, or the interest of the mortgagee in it **2** : a binding obligation ⟨however stridently the American writer may protest his Americanism . . . he can never pay off his ~ to the past —*Times Lit. Supp.*⟩ ⟨the first president . . . to feel unencumbered by any ~ to Congress —W.E. Binkley⟩
²mortgage \", *esp in pres part* -gəj\ *vt* -ED/-ING/-S **1** : to grant or convey by a mortgage : make a mortgage conveyance of **2** : to subject to a claim or obligation : PLEDGE ⟨found myself *mortgaged* to my father for about one hundred and fifty dollars —Roger Eddy⟩ ⟨a view of life . . . in which the individual is *mortgaged* to society —David Riesman⟩
mortgage bond *n* : a bond secured by a mortgage on property — distinguished from *debenture bond*
mortgage clause *or* **mortgagee clause** *n* : a clause endorsed on a mortgagor's insurance policy whereby the insurance company agrees to protect the mortgagee's interest regardless of any violation of the policy terms by the mortgagor
mortgage deed *n* : a deed embodying a mortgage
mort·ga·gee \ˌmȯ(r)gə'jē\ *n* -s [*²mortgage* + *-ee*] : a person who takes a mortgage on another's property as security for a debt or obligation
mortgage guarantee bond *n* : insurance against loss due to default in payments of interest or principal by a mortgagor
mortgage insurance *n* : insurance that protects a mortgagee against loss because of default in payments by a mortgagor
mortgage loan *n* : a loan secured by a mortgage on real property
mortgage redemption insurance *n* : insurance upon the life of a mortgagor providing for payment of any unpaid balance of the mortgage loan at the insured's death
mort·ga·gor \'mȯrgi,jȯ(ə)r, ˌmȯgi,jȯ(ə), '-ˌjə(r)\ *also* **mortgag·er** \'-jə(r)\ *n* -S [*²mortgage* + *-or* or *-er*] : a person who gives a mortgage on his property as security for a loan he receives or other obligation
mor·tial \'mȯrshəl\ *dial var of* MORTAL
mortice *var of* MORTISE
mor·ti·cian \mȯ(r)'tishən\ *n* -S [L *mort-*, *mors* death + E *-ician* — more at MORTAL] : FUNERAL DIRECTOR ⟨saw the old Victorian houses taken over by ~s and auto showrooms — *Time*⟩ ⟨on the scene appears a solemn ~ —Robert Frost⟩
mor·tier \mȯr·'tyā\ *n* -S [F, mortier, vessel in which substances are pounded or rubbed — more at MORTAR] : a headdress formerly worn by certain high functionaries of the law in France
mor·tif·er·ous \(')mȯ(r)'tif(ə)rəs\ *adj* [L *mortifer*, *mortiferus*, fr. *morti-* (fr. *mort-*, *mors* death) + *-fer*, *-ferus* -fer, -ferous] : DEADLY, FATAL — **mor·tif·er·ous·ly** *adv* — **mor·tif·er·ous·ness** *n* -ES
mor·tif·ic \(')mȯ(r)'tifik\ *adj* [LL *mortificus*, fr. L *morti-* (fr. *mort-*, *mors* death) + *-ficus* -fic] *archaic* : producing death
mor·ti·fi·ca·tion \ˌmȯr(r)d·ə·fə'kāshən, -(r)təf-\ *n* -S [ME *mortificacion*, fr. MF *mortification*, fr. LL *mortification-*, *mortificatio* mortification, killing, fr. *mortificatus* (past part. of *mortificare* to mortify, kill) + L *-ion-*, *-io* -ion] **1 a** : the subjection and denial of bodily passions and appetites by abstinence or self-inflicted pain or discomfort ⟨fasted for the day as a ~⟩ **b** : something that mortifies : a cause of humiliation or chagrin **2** *Scots law* : a gift for religious, charitable, or public uses corresponding to mortmain **3** *archaic* : a numbing of the vital faculties : a loss of consciousness at the approach of death : INSENSIBILITY **4** : local death of tissue in the animal body : GANGRENE **5** : a sense of humiliation and shame caused by something that wounds one's pride or self-respect (as a slight, a deep disappointment, or a personal failure) : CHAGRIN ⟨the ~ of being jilted by a little boarding-school girl —Washington Irving⟩ ⟨felt deep ~ at the plight of his invincible fleet —J.L.Motley⟩ ⟨in real life she suffered such bitter ~ in the company of her fellow creatures —Robert Cantwell⟩
mortification root *n* : MARSHMALLOW 1a
mortified *adj* [fr. past part. of *mortify*] **1** : insensible to worldly or sensual pleasures : having the appetites in subjection : ASCETIC, AUSTERE ⟨the fame of his ~ life and supernatural gift of counsel —C.M.Rooney⟩ ⟨could be no gainsaying his brilliant intellectual gifts or his ~ daily life — *Times Lit. Supp.*⟩ **2** : affected by gangrene : GANGRENOUS **3** *obs* : being without feeling : DEADENED ⟨strike in their numbed and ~ bare arms pins, wooden pricks, nails —Shak.⟩ **4** *archaic* : DECAYED, ROTTEN ⟨in such a ~condition, that no other people . . . would feed upon it —Tobias Smollett⟩ **5** : deeply embarrassed or humiliated ⟨terribly ~ to find that his host had forgotten about him⟩ **syn** see ASHAMED
mor·ti·fied·ly *adv* : in a mortified manner
mor·ti·fi·er \'mȯrd·ə,fī(ə)r\ *n* -S : one that mortifies
mor·ti·fy \'mȯ(r)d·ə,fī, -(r)tə-\ *vb* -ED/-ING/-ES [ME *mortifien*, fr. MF *mortifier*, fr. LL *mortificare* to mortify, kill, fr. L *morti-* (fr. *mort-*, *mors* death) + *-ficare* -fy] *vt* **1** *obs* **a** : to put to death : DESTROY ⟨if ye through the spirit do ~ the deeds of the body, ye shall live —Rom 8:13 (AV)⟩ **b** : to destroy the strength, vitality, or functioning of : deaden the effect of ⟨the tendons were *mortified* and . . . he could never have the use of his leg —Daniel Defoe⟩ ⟨the knowledge of future evils *mortifies* present felicities —Sir Thomas Browne⟩ **2** : to subdue or deaden (as the body or bodily appetites) by abstinence, self-discipline, or self-inflicted pain or discomfort ⟨the flesh tended to corruption, and to achieve the pious ends of life one must ~ it . . . lessening its appetites by fasting and abstention —Lewis Mumford⟩ ⟨one is taught in the noviceship to ~ one's palate at least once during every meal —Monica Baldwin⟩ **3** *Scots law* : to grant in mortmain for religious, charitable, or public uses ⟨to administer and manage the whole revenue and property of the University including funds *mortified* for bursaries and other purposes —*Edinburgh Univ. Cal.*⟩ **4** *obs* : to make (meat) tender by aging **5** : to subject to or cause to feel embarrassment, chagrin, or vexation : HUMILIATE ⟨it would ~ me that you shouldn't be perfectly dressed —W.S. Maugham⟩ ⟨was no longer *mortified* by comparisons between her sisters' beauty and her own —Jane Austen⟩ ~ *vi* **1** : to practice mortification : lead an ascetic life ⟨a sort of mammoth lay monastery relieved of the obligation to ~ —James Binder⟩ **2** : to lose organic structure : become gangrenous : DECAY
mor·ti·fy·ing·ly *adv* : in a mortifying manner
mor·tis can·sa \'mȯrd·ə'skan|sə, -kō|, |zə\ *adj* [L, because of death] : made by reason of or in contemplation of impend-

ED BURKHARDT:

11/25/91 PM MEASUREMENTS

S80 -217 Hz Not Cuba
-25.8
-23.1
-5.5
-4
-1 ← Cuba
0
+1
+6
+10
+23.4 USA

Schmidt claims WHP on frequency.
WCHS close to on frequency.

- WHP NOT STEREO (DA-1)
- AT NIGHT WHP STEREO LIGHT KICKS ON & OFF.

REV1 9.

PRELIMINARY OBSERVATIONS ON REPORT AND ORDER DOCKET NO. 87-267 OCTOBER 28, 1991

DAYTIME

- Retains 0.5 mV/m protected contour for Class B stations
- Retains 20/1 co-channel ratio desired to undesired
- Change from 1/1 1st adj. to 2/1 desired to undesired
- Change from 2/25 mV/m to 5/5 mV/m
- Retains 25/25 mV/m for third adjacent
- For 535 - 1605 kHz coverage 5 mV/m to serve 80%
  For 1605 - 1705 kHz coverage 5 mV/m to serve 50%
- Re groundwave graphs - Graph #21 missing and it appears no expanded scale graph 1/

- Daytime charges = No increase in Overlap

Clear Channel Station

- Retains daytime 0.1 mV/m
- Removes definition of Dominant and Secondary Station
- 1st. adjacent channel nighttime protection: Afforded between Class B stations--
- 1st. adjacent channel nighttime protection: not provided from Class B's from Class A's 2/
- 1st adjacent channel nighttime protection: Apparently silent re protection from A's to B's (should be reciprocal with above item) or Class A to Class A 2/

Expanded Band See Section 73.30, 73.35
Calculation of improvement factors Section 73.35

Three Tiered Nighttime RSS System - Station Applications

- Stations contributing to another station's RSS using 50% exclusion - Reduce contrib. by 10%

- Stations contributing to another station's RSS using less than 50% exclusion and included in 25% exclusion - No change if no increase

- Stations contributing to another station's RSS using less than or equal to 25% exclusion - No change

- Stations contributing to another station's RSS using less than 25% exclusion - May increase up to less than 25%

1/ Will not be published in CFR or included in rules system. The gate is open for any kind of graph.

2/ Seems to require mutual protection.

PRELIMINARY OBSERVATIONS ON
REPORT AND ORDER DOCKET NO. 87-267
OCTOBER 28, 1991
(cont)

- 0% exclusion used for computing Improvement Factor "IF" for migration to expanded band
- 73.182(q) Table Permissible nighttime skywave interfering signal - Class B = 25 uV/m co-channel
- 73.182(q) Table Permissible nighttime skywave interfering signal - Class B = 250 uV/m 1st adjacent channel
- See Footnote 39, Page 24, if station DA "Q" factor already limits ability to change facilities?
- Stations operating Class II-S, III-S can go DA-2
- Are night RSS's computed using Class II-S, III-S contributions?

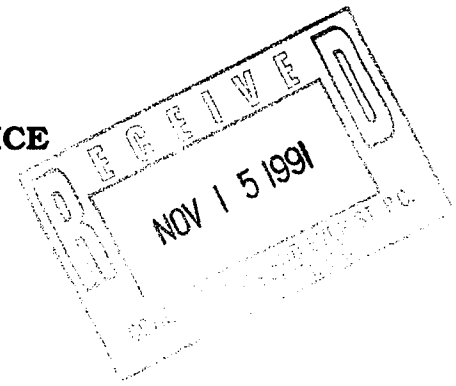
Observations 10/28/91 Rev.1

- New station classifications that parallel international agreements.
- Class III (new Class B) may use up to 50 kW consistent with interference protection.
- 2 mV/m nighttime Enom for Class B.
- Section 73.37(b) deleted--received daytime interference up to the 1 mV/m.
- 6 dB nighttime first AC ratio to groundwave.
- 0 dB first AC protection to skywave service not adopted.
- Adjacent channel stations are included in a stations' RSS.
- 50% RSS using first AC and co-channel stations used for calculation of nighttime service.
- Full-time Class II and III stations may reclassify to II-s and III-s.

PRELIMINARY OBSERVATIONS ON
REPORT AND ORDER DOCKET NO. 87-267
OCTOBER 28, 1991
(cont)

- Waiver requests for split-frequency operations will be consisted.
- Unconventional antennas will be permitted for Class II-s and III-s stations.
- 10 kW day 1 kW night permitted in expanded band.
- Class IV stations not eligible to migrate.
- Technical stds for expanded band same as for existing band.
- AM stereo in existing band voluntary but preference given to stereo proponents in the expaned band.
- TIS permitted on any channel as secondary operation.
- Freeze lifted after 70 days.

BURKHARDT MONITORING SERVICE
P.O. Box 1411
Glen Allen, Virginia 23060
(804) 261-1800



date: November 13, 1991
to: King Hall, FCC Signal Analysis
from: Ed Burkhardt

(1) Please let me know what steps should be taken the next time I note CFJR, 830 kHz, Brockville, ONT operating day mode at night?

(2) The 1500.145 kHz interference continues.

Direccion Nacional de Comunicaciones
Apartado 10-006
1000 San Jose, Costa Rica

(3) Would you please assist in identification of the following night signals, nominal frequencies given, those above 1700 are of adjacent channel concern:

1610 kHz	radio Anguilla (BWI) (known station)
1610.036	unidentified station
1620	travelers radio Virginia Beach, VA
1620	unidentified station -18Hz
1639	beacon: RD
1647	Rad Nav
1659	beacon: 9W337
1660	beacon: 9W040
1666	3 seperate beacons: B161, 9W116 and 9W346
1670	2 seperate beacons: KA90370 and 9W350
1674	slow-slow dashes (possible faulty keyed beacon)
1681.6	sharp pulses every 0.76 seconds ← 79 pulses / minute
1683	2 seperate beacons: B448 and 9W263
1684.9	MCW beacon: MER E or E MER
1685	2 seperate beacons: B490 and 9W265
1688	beacon: A334
1692	beacon: B187
1692	beacon: KA90237 (bearing 56 or 236 deg)
1695	beacon: B500
1696	beacon: A326
1698	beacon: B193
1699.960	MCW beacon: CPA
1700	multiplex
1706	multiplex
1717.4	Rad Nav
1719.2	FSK
1721.4	Rad Nav
1723.8	Rad Nav
1724.6	Rad Nav

~ 10 w/km 6:30 AM

~ 20 w/km 6:30 AM

✓ bcc: Don Everist

morrowmass *n* [ME *morwemasse*, fr. *morwe* morning + *masse* mass] *obs* : a mass said early in the morning : daily mass
mors *pl of* MOR
mor·sal \'mȯrsəl\ *adj* [L *morsus* bite + E *-al*] : OCCLUSAL
¹morse \'mȯ(ə)rs, 'mȯ(ə)s\ *n* -S [ME *mors*, fr. MF, morse, bite, fr. OF, bite] : a clasp or brooch used to fasten a cope
²morse \"\ *n* -S [Lapp *morša*] : WALRUS
³morse \"\ *n* -S *often cap* [after Samuel F. B. *Morse* †1872] : MORSE CODE
⁴morse \"\ *vb* -ED/-ING/-S *vi* : to send Morse code : communicate by means of Morse code ~ *vt* : to signal to by means of Morse code : TELEGRAPH
morse code *n, usu cap M* [after Samuel F. B. *Morse* †1872 Am. artist and inventor] : either of two codes in which letters of the alphabet, numbers, and other symbols are represented by

MORSE CODE

AMERICAN MORSE CODE[1]

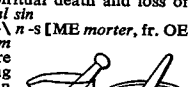
A ·−	K −·−	U ··−	5 ·····
B −···	L ·−··	V ···−	6 −····
C −·−·	M −−	W ·−−	7 −−···
D −··	N −·	X −··−	8 −−−··
E ·	O −−−	Y −·−−	9 −−−−·
F ··−·	P ·−−·	Z −−··	0 −−−−−
G −−·	Q −−·−	1 ·−−−−	, (comma) −−··−−
H ····	R ·−·	2 ··−−−	. ·−·−·−
I ··	S ···	3 ···−−	&· ·−···
J ·−−−	T −	4 ····−	

INTERNATIONAL CODE[2]

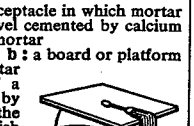
A ·−	N −·	Á ·−−·−	8 −−−··
B −···	O −−−	Ä ·−·−	9 −−−−·
C −·−·	P ·−−·	É ··−··	0 −−−−−
D −··	Q −−·−	Ñ −−·−−	, (comma) −−··−−
E ·	R ·−·	Ö −−−·	. ·−·−·−
F ··−·	S ···	Ü ··−−	? ··−−··
G −−·	T −	1 ·−−−−	; −·−·−·
H ····	U ··−	2 ··−−−	: −−····
I ··	V ···−	3 ···−−	' (apostrophe) ·−−−−·
J ·−−−	W ·−−	4 ····−	- (hyphen) −····−
K −·−	X −··−	5 ·····	/ −··−·
L ·−··	Y −·−−	6 −····	parenthesis −·−−·−
M −−	Z −−··	7 −−···	underline ··−−·−

[1]Formerly used on landlines in the U.S. and Canada; now largely out of use.
[2]Often called the continental code; a modification of this code, with dots only, is used on ocean cables.

dots and dashes or long and short sounds and used for transmitting messages by audible or visual signals (as by telegraphy, wigwag, or light flashes)
¹mor·sel \'mȯrsəl, 'mȯ(ə)s-\ *n* -S [ME, fr. OF, fr. *mors* bite (fr. L *morsus*, fr. *morsus*, past part. of *mordēre* to bite) + *-el* — more at SMART] **1 a** : a small piece or quantity of food : BITE ⟨the multitude was kept quiet by the ~*s* of meat which were flung to it —J.A.Froude⟩ ⟨deftly ladled a spoonful of this and a ~ of that into the . . . skillet —Elinor Wylie⟩ ⟨a bitter ~ to swallow⟩ **b** : a small meal : SNACK ⟨came home, ate his ~ quickly, and left⟩ **2** : a small quantity of something : a little piece or portion : FRAGMENT ⟨that ~ of information lay dormant for over a hundred years —C.C.Furnas⟩ ⟨his last remaining ~ of self-respect⟩ ⟨a tiny ~ of land lost in the ocean⟩ **3 a** : a tasty dish : TIDBIT ⟨such exotic ~*s* as Japanese frog legs, Alaskan king crabs, Indian pompano —*Time*⟩ ⟨sitting apart munching his own delectable ~*s* —C.S.Kilby⟩ **b** : something delectable and pleasing ⟨the girl . . . is young and very pretty . . . a ~ worth a little lordly condescension —Eric Blom⟩ ⟨his shorter piano pieces include some choice ~*s*⟩ **4** : a small or negligible person ⟨this ancient ~ —Shak.⟩
²morsel \"\ *vt* **morseled** *or* **morselled; morseled** *or* **morselled; morseling** *or* **morselling; morsels** : to divide into or apportion in small pieces
morse lamp *n, usu cap M* : a lamp used for signaling by flashes corresponding to the dashes and dots of the Morse code
mor·sing \'mȯrsiŋ\ *n* -S [fr. gerund of obs. Sc *mors* to grease, prime (a firearm), modif. of MF *amorcer, amorsser* to prime (a firearm), bait, fr. *amorce, amorse* bait, fr. OF, fr. *amorse*, fem. of *amors*, past part. of *amordre* to bite, fr. L *admordēre*, fr. *ad-* + *mordēre* to bite] *archaic Scot* : PRIMING
mor·sure \'mȯr,shür\ *n* -S [ME, fr. MF, fr. LL *morsura*, fr. L *morsus*, past part. of *mordēre* to bite] *archaic* : BITE
¹mort \'mȯ(ə)rt, 'mȯ(ə)t, *usu* -d·+V\ *n* -S [prob. alter. (influenced by MF *mort* death, fr. L *mort-, mors*) of ME *mot* note of a horn, fr. MF, note of a horn, word, saying — more at MOT] **1** : a note sounded on a hunting horn when a deer is killed ⟨the hunters, with their horns and voices, whooping and blowing a ~ —Sir Walter Scott⟩ **2** : the act of putting to death : KILLING ⟨~ of the English stag —Glenway Wescott⟩
²mort \"\ *n* -S [origin unknown] **1** *archaic* : GIRL, WOMAN ⟨male gypsies all, not a ~ among them —Ben Jonson⟩ **2** *archaic* : MISTRESS, SWEETHEART
³mort \'mȯrt\ *n* -S [prob. alter. of obs. E *morkin* animal that has died a natural death, fr. ME *mortkyn*, prob. modif. (influenced by ME *-kyn, -kin* -kin) of MF *morticine* carrion, fr. LL *morticina*, fr. L, fem. of *morticinus* dead of natural causes, fr. *mort-, mors* death] *chiefly Scot* : the skin or fleece of a sheep that has died a natural death
⁴mort \"\ *n* -S [origin unknown] *dial Eng* : the fat of a hog from which lard is made : LARD
⁵mort \'mȯ(ə)rt, 'mȯ(ə)t, *usu* -d·+V\ *n* -S [F or L; F, fr. *mort*, adj., dead, fr. L *mortuus*, past part. of *mori* to die] : a dead body : CORPSE ⟨unburied ~ —Henry James †1916⟩
⁶mort \"\ *n* -S [prob. back-formation fr. *¹mortal*] : a great quantity or number : a great deal : ABUNDANCE ⟨had a ~ of things to be thankful for —Ellen Glasgow⟩ ⟨after the ~ of trouble I took —James Still⟩
mor·ta·cious \mȯr'tāshəs\ *adv* [prob. fr. *⁶mort* + *-acious* (as in *audacious*)] *dial Eng* : EXTREMELY, TERRIBLY
mor·ta·del·la \ˌmȯ(r)d·ə'delə\ *n* -S [It, irreg. fr. L *murtatum* sausage seasoned with myrtle berries, fr. *murtus* myrtle + *-atum* -ate — more at MYRTLE] : a sausage made of chopped beef, pork, and pork fat, seasoned with pepper and garlic, stuffed into large casings, cooked, and smoked
¹mor·tal \'mȯr|d·ᵊl, 'mȯ(ə)|, |tᵊl\ *adj* [ME, mortal, deadly, subject to death, fr. MF *mortal, mortel*, fr. L *mortalis* subject to death, mortal, fr. *mort-, mors* death + *-alis* -al; akin to L *mori* to die — more at MURDER] **1** : destructive to life : causing or capable of causing death : FATAL ⟨a ~ disease⟩ ⟨a ~ blow⟩ ⟨a ~ wound⟩ ⟨~ danger⟩ ⟨a new fact that was ~ to his theory⟩ **2** : subject to death : destined to die ⟨all men are ~⟩ ⟨attended all that was ~ of their benefactor to the funeral pyre —J.G. Frazer⟩ ⟨these pictures have a very ~ look, but the poems refuse to fade —*N. Y. Herald Tribune Bk. Rev.*⟩ **3 a** : aiming at extermination : fought to the death ⟨living in one of those periods of history when wars are frequent and ~ —John Strachey⟩ ⟨won a ~ contest against a totalitarian system which ~ crime —Sir Winston Churchill⟩ — see MORTAL SIN **7** : of, relating to, or connected with death ⟨the ~ moment when the bombers, committed to their target, are locked defenseless in their courses —*Time*⟩ ⟨fell with a scream of ~ agony —F.V.W.Mason⟩ **8** : humanly conceivable or possible : EARTHLY ⟨every ~ thing the heart could wish for —A.E. Coppard⟩ ⟨done all you asked — every ~ thing —Michael McLaverty⟩ **9** *archaic* : marked by many deaths ⟨a very sickly and ~ autumn —John Evelyn⟩ **10** : long and wearisome : TEDIOUS ⟨here they lay for four ~ hours, their faces close to the muddy water —E.T.Brown⟩ ⟨three ~ hours — a hundred and eighty minutes — ticked off with jerky precision —Ida Treat⟩ **11** *chiefly Scot* : DEAD-DRUNK **syn** see DEADLY
²mortal \"\ *adv* [ME, fr. *mortal*, adj.] *chiefly dial* : MORTALLY
³mortal \"\ *n* -S [*¹mortal*] **1** *obs* : something that is mortal : a mortal substance ⟨this corruptible must put on incorruption, and this ~ must put on immortality —1 Cor 15:53 (AV)⟩ **2** : one who is mortal : a human being ⟨what fools these ~*s* be —Shak.⟩ ⟨parallels are risky matters between ~*s* —Claudia Cassidy⟩ **3** : INDIVIDUAL, PERSON ⟨just the same careless ~ as to small properties that he used to be —Rachel Henning⟩
mor·tal·ism \-ᵊl,izəm\ *n* -S *usu cap* : the doctrine that the soul is mortal
mor·tal·ist \-ᵊləst\ *n* -S *usu cap* : one who holds the soul to be mortal; *specif* : a member of a 17th century English sect believing that the soul and body perished together at death and would be resurrected together
mor·tal·i·ty \mȯ(r)'taləd·ē, -ətē, -i\ *n* -ES [ME *mortalitee*, fr. MF *mortalité*, fr. L *mortalitat-, mortalitas*, fr. *mortalis* mortal + *-tat-, -tas* -ty] **1** : the quality or state of being mortal ⟨salvation is the rescue of men from the ~ which sin has brought upon them —K.S.Latourette⟩ **2** : the death of large numbers : a heavy loss of life (as by war or disease) ⟨the Black Death of 1348 caused a terrible ~ throughout Europe⟩ ⟨those rabbits, frogs, hedgehogs and caterpillars which suffer such ~ on our country roads —*Punch*⟩ **3** *archaic* : DEATH ⟨here on my knee I beg ~ —Shak.⟩ **4** : the human race : MANKIND ⟨take these tears, ~'s relief —Alexander Pope⟩ **5 a** : the whole sum or number of deaths in a given time or a given community ⟨many died and the ~ among the children mounted daily —*Amer. Guide Series: Minn.*⟩ **b** : the proportion of deaths to population or to a specific number of the population : DEATH RATE ⟨for years has had the lowest general ~ and infant death rates —V.G.Heiser⟩ — opposed to *fertility* **c** : the number lost or the rate of loss or failure in a field of human endeavor (as business or education) ⟨the ~ among college students⟩ ⟨the ~ rate of small businesses⟩
mortality table *n* : an actuarial table based upon statistical records of mortality over a number of years (as a decade) giving the rate of death per 1000 in each age group — called also *life table*; see COMBINED EXPERIENCE TABLE, COMMISSIONERS STANDARD ORDINARY TABLE
mor·tal·ize \'mȯ(r)d·ᵊl,īz\ *vt* -ED/-ING/-S : to make mortal : treat as mortal ⟨contemporary art ~*s* the immortals, stripping them of everything divine and noble —P.A.Sorokin⟩
mor·tal·ly \'mȯ(r)d·ᵊlē, -(r)tᵊl-, -ᵊli\ *adv* [ME, fr. *¹mortal* + *-ly*] **1** : in a deadly or fatal manner : to the point of death ⟨his colonel and lieutenant colonel were both ~ wounded —J.D.Hicks⟩ **2** : to an extreme degree : GRIEVOUSLY, INTENSELY ⟨millions have come out of the war lost souls . . . still ~ afraid —F.S.Kinney⟩ ⟨~ hates and fears a fall in farm income —*Time*⟩ **3** : by way of mortal sin ⟨the souls of those who have sinned ~ —R.M.French⟩ **4** : AWFULLY, EXTREMELY ⟨all novelists and dramatists without genius . . . are usually being ~ serious about middle-class people entangled by Fate —F.A.Swinnerton⟩
mortal mind *n, Christian Science* : a belief that life, substance, and intelligence are in and of matter : ILLUSION — opposed to *Spirit*
mortal sin *n* [ME *mortal synne*] *Roman Catholicism* : a serious sin or a lesser sin aggravated by circumstances committed willfully and viewed as involving spiritual death and loss of divine grace — contrasted with *venial sin*
¹mor·tar \'mȯr|d·ər, 'mȯ(ə)|d·ə(r, |tə-\ *n* -S [ME *morter*, fr. OE *mortere* & MF *mortier*, fr. L *mortarium*] mortar, vessel in which substances are pounded or rubbed, plastic building material that hardens and is used in masonry, trough in which mortar is mixed; akin to Gk *marainein* to waste away — more at SMART] **1 a** : a small usu. bowl-shaped vessel made of a hard material (as porcelain or brass) in which substances are pounded or rubbed with a pestle **b** : a large cast-iron receptacle in which ore is crushed in a stamp mill **2** *archaic* **a** : a bowl of oil with a floating wick **b** : a thick candle **3** [MF *mortier* muzzle-loading cannon having a tube short in relation to its caliber, vessel in which substances are pounded or rubbed] **a** : a muzzle-loading cannon having either a rifled or smooth bore and a tube short in relation to its caliber that is used to throw projectiles with low muzzle velocities at high angles **b** : any of several similar firing devices used for various purposes (as to throw a lifeline or to fire pyrotechnic bombs or shells)


mortars with pestles: *1* glass, *2* porcelain

²mortar \"\ *vb* -ED/-ING/-S *vt* : to direct mortar fire upon or to hit with mortar shells ⟨the enemy . . . was ~*ing* a crossroads behind our lines and interfering with our movements —C.C.Wertenbaker⟩ ⟨the leading tank . . . radioed it had been ~*ed* —*Life*⟩ ~ *vi* : to fire mortars ⟨can expect the ~*ing* to begin any minute —Ned Calmer⟩
³mortar \"\ *n* -S [ME *morter*, fr. OF *mortier*, fr. L *mortarium*] **1** : a plastic building material that hardens and is used in masonry or plastering; *esp* : a mixture of cement, lime, or gypsum plaster with sand and water that is used in either the plastic or hardened state ⟨the masons are calling for ~ —Walt Whitman⟩ **2** : something that binds or holds together ⟨our dreams are built solidly with the ~ of our toil and blood —Stuart Cloete⟩ ⟨moral and spiritual values . . . the ~ which holds together the other educational ingredients —*Educational and Psychological Measurement*⟩
⁴mor·tar \'mȯrtər\ *vb* -ED/-ING/-S [ME *morteren*, fr. *morter*, n.] *vt* : to plaster or make fast with mortar ~ *vi*, *dial Eng* : to tramp about esp. with mud or dirt on one's feet ⟨keep ~*in*' in and out, in and out, for everlastin' trampin' through —H.E. Bates⟩
mortar bed *n* **1** : a shallow box or receptacle in which mortar is mixed **2** : a layer of sand or gravel cemented by calcium carbonate and resembling hardened mortar
mortarboard \'ˌ=ˌ=\ *n* **1 a** : HAWK 3 **b** : a board or platform about 3 feet square for holding mortar **2** : an academic cap consisting of a closely fitting headpiece surmounted by a broad flat projecting square top ⟨the shape of the hat as stiff and uncoquettish as a ~ —Frances G. Patton⟩ ⟨the candidates for honorary degrees, now sitting fussing nervously with their gowns and ~ hats —*Harper's*⟩


mortarboard 2

mortar boat *n* : a boat adapted to carrying a mortar or mortars for bombarding
mor·tar·less \'mȯ(r)d·ə(r)ləs\ *adj* : having or using no mortar ⟨a ~ stone foundation⟩
mor·tar·man \'=mən\ *n, pl* **mortarmen** : a member of a crew that fires a mortar
mortarware \'=ˌ=\ *n* [*¹mortar* + *ware*] : a hard stoneware (assumed) obs. F *mort d'échine*, lit., death of the spine, fr. MF *mort de eschine*] *Scot* : GLANDERS
¹mort·gage \'mȯrgij, 'mȯ(ə)g-, -gēj\ *n* -S [ME *morgage*, fr. MF, fr. OF, fr. *mort* dead (fr. L *mortuus*, past part. of *mori* to die) + *gage* security, gage — more at MURDER, GAGE] **1 a** : a conveyance of property upon condition (as security for the payment of a debt or the performance of a duty) that operates as a lien or charge securing the payment of the money or the performance of an obligation so that the mortgagee may under certain conditions take possession and may foreclose the property upon default, that becomes void upon payment or performance according to stipulated terms, and that leaves possession with the mortgagor and subjects the mortgagee's defeasible estate in the land to the equity of redemption and foreclosure rules of the equity courts — see CHATTEL MORTGAGE, EQUITABLE MORTGAGE, FIRST MORTGAGE, INSTALLMENT MORTGAGE, JUNIOR MORTGAGE, LEASEHOLD MORTGAGE, PARTICIPATING MORTGAGE, PURCHASE-MONEY MORTGAGE, SECOND MORTGAGE, TRUST MORTGAGE; compare ANTICHRESIS, EQUITY OF REDEMPTION, GAGE, HYPOTHEC, LIVING PLEDGE, PLEDGE **b** : the instrument by which a mortgage conveyance is made, the state of the property so conveyed, or the interest of the mortgagee in it **2** : a binding obligation (however stridently the American writer may protest his Americanism . . . he can never pay off his ~ to the past —*Times Lit. Supp.*⟩ ⟨the first president . . . to feel unencumbered by any ~ to Congress —W.E. Binkley⟩
²mortgage \", *esp in pres part* -gəj\ *vt* -ED/-ING/-S **1** : to grant or convey by a mortgage : make a mortgage conveyance of **2** : to subject to a claim or obligation : PLEDGE ⟨found myself *mortgaged* to my father for about one hundred and fifty dollars —Roger Eddy⟩ ⟨a view of life . . . in which the individual is *mortgaged* to society —David Riesman⟩
mortgage bond *n* : a bond secured by a mortgage on property — distinguished from *debenture bond*
mortgage clause *or* **mortgagee clause** *n* : a clause endorsed on a mortgagor's insurance policy whereby the insurance company agrees to protect the mortgagee's interest regardless of any violation of the policy terms by the mortgagor
mortgage deed *n* : a deed embodying a mortgage
mort·ga·gee \ˌmȯ(r)gə'jē\ *n* -S [*²mortgage* + *-ee*] : a person who takes a mortgage on another's property as security for a debt or obligation
mortgage guarantee bond *n* : insurance against loss due to default in payments of interest or principal by a mortgagor
mortgage insurance *n* : insurance that protects a mortgagee against loss because of default in payments by a mortgagor
mortgage loan *n* : a loan secured by a mortgage on real property
mortgage redemption insurance *n* : insurance upon the life of a mortgagor providing for payment of any unpaid balance of the mortgage loan at the insured's death
mort·ga·gor \'mȯrgij|jȯ(ə)r, ˌmȯgi|jȯ(ə), ˌ=ᵊ=jə(r)\ *also* **mortgag·er** \'=ᵊ=jə(r)\ *n* -S [*²mortgage* + *-or* or *-er*] : a person who gives a mortgage on his property as security for a loan he receives or other obligation
mor·tial \'mȯrshəl\ *dial var of* MORTAL
mortice *var of* MORTISE
mor·ti·cian \mȯ(r)'tishən\ *n* -S [L *mort-, mors* death + E *-ician* — more at MORTAL] : FUNERAL DIRECTOR ⟨saw the old Victorian houses taken over by ~*s* and auto showrooms — *Time*⟩ ⟨on the scene appears a solemn ~ —Robert Frost⟩
mor·tier \mȯr'tyā\ *n* -S [F, mortier, vessel in which substances are pounded or rubbed — more at MORTAR] : a headdress formerly worn by certain high functionaries of the law in France
mor·tif·er·ous \(')mȯ(r)'tifə(r)əs\ *adj* [L *mortifer, mortiferus*, fr. *morti-* (fr. *mort-, mors* death) + *-fer, -ferus* -fer, -ferous] : DEADLY, FATAL — **mor·tif·er·ous·ly** *adv* — **mor·tif·er·ous·ness** *n* -ES
mor·tif·ic \(')mȯ(r)'tifik\ *adj* [LL *mortificus*, fr. L *morti-* (fr. *mort-, mors* death) + *-ficus* -fic] *archaic* : producing death
mor·ti·fi·ca·tion \ˌmȯ(r)d·əfə'kāshən, -(r)təf-\ *n* -S [ME *mortificacion*, fr. MF *mortification*, fr. LL *mortification-, mortificatio* mortification, killing, fr. *mortificatus* (past part. of *mortificare* to mortify, kill) + L *-ion-, -io* -ion] **1 a** : the subjection and denial of bodily passions and appetites by abstinence or self-inflicted pain or discomfort ⟨fasted for the day as a ~⟩ **b** : something that mortifies : a cause of humiliation or chagrin **2** *Scots law* : a gift for religious, charitable, or public uses corresponding to mortmain **3** *archaic* : a numbing of the vital faculties : a loss of consciousness at the approach of death : INSENSIBILITY **4** : local death of tissue in the animal body : GANGRENE **5** : a sense of humiliation and shame caused by something that wounds one's pride or self-respect (as a slight, a deep disappointment, or a personal failure) : CHAGRIN ⟨the ~ of being jilted by a little boarding-school girl —Washington Irving⟩ ⟨felt deep ~ at the plight of his invincible fleet —J.L.Motley⟩ ⟨in real life she suffered such bitter ~ in the company of her fellow creatures —Robert Cantwell⟩
mortification root *n* : MARSHMALLOW 1a
mortified *adj* [fr. past part. of *mortify*] **1** : insensible to worldly or sensual pleasures : having the appetites in subjection : ASCETIC, AUSTERE ⟨the fame of his ~ life and supernatural gift of counsel —C.M.Rooney⟩ ⟨could be no gainsaying his brilliant intellectual gifts or his ~ daily life — *Times Lit. Supp.*⟩ **2** : affected by gangrene : GANGRENOUS **3** *obs* : being without feeling : DEADENED ⟨strike in their numbed and ~ bare arms pins, wooden pricks, nails —Shak.⟩ **4** *archaic* : DECAYED, ROTTEN ⟨in such a ~ condition, that no other people . . . would feed upon it —Tobias Smollett⟩ **5** : deeply embarrassed or humiliated ⟨terribly ~ to find that his host had forgotten about him⟩ **syn** see ASHAMED
mor·ti·fied·ly *adv* : in a mortified manner
mor·ti·fi·er \'mȯrd·əˌfī(ə)r\ *n* -S : one that mortifies
mor·ti·fy \'mȯ(r)d·əˌfī, -(r)tə-\ *vb* -ED/-ING/-ES [ME *mortifien*, fr. MF *mortifier*, fr. LL *mortificare* to mortify, kill, fr. L *morti-* (fr. *mort-, mors* death) + *-ficare* -fy] *vt* **1** *obs* **a** : to put to death : DESTROY ⟨if ye through the spirit do ~ the deeds of the body, ye shall live —Rom 8:13 (AV)⟩ **b** : to destroy the strength, vitality, or functioning of : deaden the effect of ⟨the tendons were *mortified* and . . . he could never have the use of his leg —Daniel Defoe⟩ ⟨the knowledge of future evils *mortifies* present felicities —Sir Thomas Browne⟩ **2** : to subdue or deaden (as the body or bodily appetites) by abstinence, self-discipline, or self-inflicted pain or discomfort ⟨the flesh tended to corruption, and to achieve the pious ends of life one must ~ it . . . lessening its appetites by fasting and abstention —Lewis Mumford⟩ ⟨one is taught in the noviceship to ~ one's palate at least once during every meal —Monica Baldwin⟩ **3** *Scots law* : to grant in mortmain for religious, charitable, or public uses ⟨to administer and manage the whole revenue and property of the University including funds *mortified* for bursaries and other purposes —*Edinburgh Univ. Cal.*⟩ **4** *obs* : to make (meat) tender by aging **5** : to subject to or cause to feel embarrassment, chagrin, or vexation : HUMILIATE ⟨it would ~ me that you shouldn't be perfectly dressed —W.S. Maugham⟩ ⟨was no longer *mortified* by comparisons between her sisters' beauty and her own —Jane Austen⟩ ~ *vi* **1** : to practice mortification : lead an ascetic life ⟨a sort of mammoth lay monastery relieved of the obligation to ~ —James Binder⟩ **2** : to lose organic structure : become gangrenous : DECAY
mor·ti·fy·ing·ly *adv* : in a mortifying manner
mor·tis can·sa \'mȯrd·ə'skaⁿ|sə, -kō|, |zə\ *adj* [L, because of death] : made by reason of or in contemplation of impend-

ED BURKHARDT:

11/25/91 PM MEASUREMENTS

S60 -217 Hz Not Cuba
-25.8
-23.1
-5.5
-4
-1 ← Cuba
0
+1
+6
+10
+23.4 USA

Schmidt claims WHP on frequency.
WCHS close to on frequency.

- WHP NOT STEREO (DAY)
- AT NIGHT WHP STEREO LIGHT KICKS ON & OFF.

REV1 9.

PRELIMINARY OBSERVATIONS ON REPORT AND ORDER DOCKET NO. 87-267 OCTOBER 28, 1991

DAYTIME

- Retains 0.5 mV/m protected contour for Class B stations
- Retains 20/1 co-channel ratio desired to undesired
- Change from 1/1 1st adj. to 2/1 desired to undesired
- Change from 2/25 mV/m to 5/5 mV/m
- Retains 25/25 mV/m for third adjacent
- For 535 - 1605 kHz coverage 5 mV/m to serve 80%
  For 1605 - 1705 kHz coverage 5 mV/m to serve 50%
- Re groundwave graphs - Graph #21 missing and it appears no expanded scale graph 1/

- Daytime charges = No increase in Overlap

Clear Channel Station

- Retains daytime 0.1 mV/m
- Removes definition of Dominant and Secondary Station
- 1st. adjacent channel nighttime protection: Afforded between Class B stations--
- 1st. adjacent channel nighttime protection: not provided from Class B's from Class A's 2/
- 1st adjacent channel nighttime protection: Apparently silent re protection from A's to B's (should be reciprocal with above item) or Class A to Class A 2/

Expanded Band See Section 73.30, 73.35
Calculation of improvement factors Section 73.35

Three Tiered Nighttime RSS System - Station Applications

- Stations contributing to another station's RSS using 50% exclusion - Reduce contrib. by 10%

- Stations contributing to another station's RSS using less than 50% exclusion and included in 25% exclusion - No change if no increase

- Stations contributing to another station's RSS using less than or equal to 25% exclusion - No change

- Stations contributing to another station's RSS using less than 25% exclusion - May increase up to less than 25%

1/ Will not be published in CFR or included in rules system. The gate is open for any kind of graph.

2/ Seems to require mutual protection.

PRELIMINARY OBSERVATIONS ON
REPORT AND ORDER DOCKET NO. 87-267
OCTOBER 28, 1991
(cont)

- 0% exclusion used for computing Improvement Factor "IF" for migration to expanded band
- 73.182(q) Table Permissible nighttime skywave interfering signal - Class B = 25 uV/m co-channel
- 73.182(q) Table Permissible nighttime skywave interfering signal - Class B = 250 uV/m 1st adjacent channel
- See Footnote 39, Page 24, if station DA "Q" factor already limits ability to change facilities?
- Stations operating Class II-S, III-S can go DA-2
- Are night RSS's computed using Class II-S, III-S contributions?

Observations 10/28/91 Rev.1

- New station classifications that parallel international agreements.
- Class III (new Class B) may use up to 50 kW consistent with interference protection.
- 2 mV/m nighttime Enom for Class B.
- Section 73.37(b) deleted--received daytime interference up to the 1 mV/m.
- 6 dB nighttime first AC ratio to groundwave.
- 0 dB first AC protection to skywave service not adopted.
- Adjacent channel stations are included in a stations' RSS.
- 50% RSS using first AC and co-channel stations used for calculation of nighttime service.
- Full-time Class II and III stations may reclassify to II-s and III-s.

PRELIMINARY OBSERVATIONS ON
REPORT AND ORDER DOCKET NO. 87-267
OCTOBER 28, 1991
(cont)

- Waiver requests for split-frequency operations will be consisted.
- Unconventional antennas will be permitted for Class II-s and III-s stations.
- 10 kW day 1 kW night permitted in expanded band.
- Class IV stations not eligible to migrate.
- Technical stds for expanded band same as for existing band.
- AM stereo in existing band voluntary but preference given to stereo proponents in the expaned band.
- TIS permitted on any channel as secondary operation.
- Freeze lifted after 70 days.

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Report No. DC-1951 ACTION IN DOCKET CASE September 26, 1991

FCC AMENDS RULES TO IMPROVE THE QUALITY OF THE AM BROADCAST SERVICE (MM DOCKET 87-267)

The Federal Communications Commission has concluded an important phase of its long-term program designed to transform and revitalize the AM broadcast service. Numerous revisions and adjustments, both major and minor, to the existing AM rules and policies have been adopted. It is expected that today's action will go a long way toward improving the health and ensuring the survival of the AM service. The strategy relies upon the application of three mutually supporting elements designed to reduce congestion and interference in the AM band:

The elements are:

- **Technical Standards** which implements new and revised AM technical standards designed to reduce interference to AM broadcasters' primary service areas;

- **Migration** which selectively opens 10 newly available frequencies in the expanded band, 1605-1705 kHz, to those AM stations which significantly contribute to congestion and interference in the existing band;

- **Consolidation** which affords broadcasters greater latitude and incentive for reducing interference through non-technical means.

TECHNICAL STANDARDS

A number of steps were taken to improve the quality of service in the existing AM band. Specifically, the Commission:

- increased the first and second adjacent channel protection ratios to reduce adjacent channel interference and to promote the development of receivers with higher audio fidelity;

- refined the methodology for calculating nighttime coverage and interference so as to more accurately measure interference effects, thus improving nighttime reception; and,

- will selectively require a 10 percent interference reduction when voluntary modifications are made to AM station facilities, thus gradually reducing the overall presence of interference.

(over)

MIGRATION

The Commission adopted rules for the expanded band that are designed to reduce interference in the existing band, while facilitating the prompt initiation of high quality service in the new broadcasting spectrum. By taking this action, the Commission intends to manage the migration process to maximize the benefits to AM service as a whole. Rules have been established to encourage those existing stations whose migration would achieve the greatest interference reductions in the existing band to move to the expanded band. The Commission reiterated its commitment to creating a model AM service in the expanded band that will utilize the full potential of AM broadcasting. To accomplish this goal, the Commission will:

- adopt an allotment plan for the AM expanded band that is based on wide station separations and low interference levels, in order to facilitate the universal establishment of service in the expanded band;

- rank competing migration proposals from existing licensees using factors related to interference reduction and service currently provided;

- offer an eligibility preference to AM stereo broadcasting in the expanded band to ensure that the competitive benefits offered by the expanded band are more fully realized; and,

- allow dual ownership and operation of existing and expanded band stations for a transitional period of five years, with a corresponding waiver of duopoly and national ownership rules during the permissible period of dual operation.

Attached as an Appendix to the Report and Order will be a Sample Allotment Plan for the expanded band. Its contents are based on the "letters of intent" received in response to the Notice of Proposed Rulemaking. This Sample Plan is for illustrative purposes only and does not represent an official allotment of channels.

Our action here initially restricting eligibility for expanded band authorizations to existing AM licensees is intended to redress the unique technical problems present in the AM service. It should not be taken to suggest any generalized Commission policy favoring existing licensees over new entrants in other services where new or expanded opportunities may arise.

CONSOLIDATION

Several non-technical rules were adopted also. First the Commission will issue tax certificates in conjunction with voluntary arrangements among licensees to reduce interference by discontinuing the operation of marginal stations. Second, it will relax its multiple ownership rules for applicants proposing facilities changes that would result in a significant reduction of interference to co-channel or adjacent channel stations.

The Commission also stated that it may be appropriate to impose some restrictions on the duplication of programming by AM-FM combinations. However, because conditions in the AM service may substantially change during the next few years, the Commission concluded that it may be premature to limit program duplication at this time. Rather, the Commission will revisit this issue at the end of three years.

As to related matters, the Commission will also:

- relax the rules pertaining to Travelers Information Stations to allow for the authorization (on a secondary basis) of such stations on any assignable frequency in the AM band; and,

- promote efforts by the broadcast industry to encourage manufacturers to comply with new industry receiver standards.

Finally, as a result of these rule changes, the Commission will lift the freeze on AM applications on the effective date of the rules which, in turn, depends on Office of Management and Budget approval.

Action by the Commission September 26, 1991, by Report and Order (FCC 91-303). Commissioners Sikes (Chairman), and Marshall, with Commissioners Quello, Barrett, and Duggan concurring in the result and each issuing a separate statement.

-FCC-

News Media contact: Patricia A. Chew at (202) 632-5050.
Mass Media Bureau contact: Larry Olson at (202) 632-6955 or William Hassinger at (202) 632-6460.

significant penetration in the market by new receivers capable of tuning in 1605 to 1705 kHz. Allowing new entrants a theoretical spot on the expanded band would be doing them no favor. For those who lack an existing station from which to weather the transition, we would be giving them nothing but a license to lose money.

For those potential entrants who genuinely are interested in becoming AM broadcasters, I would suggest exploring the possibility of acquiring an existing station. My understanding is that it is a buyer's market.

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vol 1

ReWTOP
Clear Channel

September 11, 1991

THE EMERGENCY BROADCAST SYSTEM TO HOLD REGIONAL WORKSHOP IN CHICAGO

Hurricane Hugo, the San Francisco Earthquake and Hurricane Bob are just three of the reasons why America needs an active Emergency Broadcast System (EBS). In any given year, some 700 tornados and nearly a dozen hurricanes will touch the United States; some $3.5 billion in flood damage will occur; and almost 100 lives will be lost. Richard Smith, Chief of the Field Operations Bureau at the Federal Communications Commission (FCC), recently said, "In disaster situations, lives depend on the quick and accurate dissemination of information. It's crucial for America to have a reliable, nationwide emergency broadcast system."

Since 1976, government has been working with broadcasters and state and local officials on a voluntary basis to develop EBS plans. In an effort to improve and revitalize the EBS, six regional workshops have been scheduled to update state and local area plans.

FCC Chairman Alfred Sikes emphasized that "broadcasting constitutes the only truly effective means of providing emergency information to the public very quickly." He said "this workshop -- and future workshops -- will improve and perfect this vital communications link between national, state and local government and the public."

The first workshop will be held September 19 at the Sheraton International At O'Hare in Chicago, Illinois. Attendees at the workshop will include federal, state and local officials as well as business and industry leaders including broadcast and cable representatives. Featured speakers from the FCC will include: Andy Fishel, Managing Director; Richard Smith, Chief, Field Operations Bureau; and William Browning, Chief of the EBS at the FCC.

The FCC has also undertaken an initiative to investigate new technology to update the technical operations of the EBS -- the first major modification since 1979.

In addition to the FCC, other government participants in the EBS include the Federal Emergency Management Agency (FEMA), the North American Aerospace Command (NORAD), NOAA National Weather Services, the White House Communications Agency as well as state and local officials.

-FCC-

News Media contact: Steve Svab at 202/632-5050
EBS contact: William Browning or Bonnie Gay at 202/632-3906

OFFICE MEMORANDUM

TO: All Engineers
FROM: Warren
RE: AM Applications
DATE: August 30, 1991

Issue One

Section 73.150(b)(6)(i) of the FCC Rules and Regulations states that the acceptable values for precision for field ratios are three significant figures. On a recent application for KUET, Black Canyon City, Arizona, the ratios submitted to the FCC specified four significant figures.

When the FCC rounds submitted parameters to conform with Section 73.150(b)(6), an array could potentially create interference toward critical areas.

Issue Two

In addition, the FCC values of computed distance between various AM stations show an approximate 0.1% difference in computed distances compared to values obtained using the Harry Anderson computer program. Accordingly, different computed RSS values may result which could potentially make a nighttime application non-compliant with the FCC Rules.

The FCC AM Branch advised that large distances are computed using the great circle method.

AM
6/24/91

13
4354D

AM RADIO -- TO BE OR NOT TO BE

The Federal Communications Commission (FCC) is reviewing the comments it received in MM Docket No. 87-267. The Commission embarked on its long review of its AM technical rules in 1987, many of these technical criteria were developed and implemented over 50 years ago. AM radio, once the king, helped support FM and television operations when they were in their infancy and now face in many markets a "do or die" prospect. AM radio for many years has provided a multitude of service daytime and nighttime, for large cities and small, and has introduced and delivered many of the innovative changes in aural broadcasting from the historic programming of the 1930's through the "top 40" formats of the 1950's and 1960's to more recently, talk radio.

This suggests that radio has survived because it has been able to introduce change. It is that quality that the FCC needs to introduce in its technical rules. The FCC needs to revise its technical rules to permit AM radio to change so that it can reposition itself and provide service that is comparable to its competition.

These technical revisions require reviewing the allocation structure, service and how AM stations were implemented. We know, for example, that by and large the clear channel stations are surviving. Their place in the market is well established and deservingly so. They must continue for the sake of their ability

to attract listenership to the AM band over a wide area coverage in normal times and in times of disaster, such as Hurrican Hugo. So much for the AM stations that can survive into the next century. What about the other issues such as the lower powered stations such as the regional station and the quality of the AM signal?

Further, the industry is grappling with the issue of DAB. One of its advertised advantages over FM radio is a claim of reduction of multipath distortion. We now currently have a service that has been free of multipath for over fifty years--AM radio. However, the central issue is how can lower powered stations such as the regional station command the public heart into the next century?

The role that AM radio was required to fill now serves to its detriment. For thirty years it was the only service and it was designed to reach and serve wide areas where now there is now a multitude of competitive services such as FM and now possibly DAB. That yesteryear approach sacrifices quality, the very essence of radio today. Therefore, for the low power regional radio station to compete it must be redesigned to permit it to provide a high level "quality" of signal and service.

Much debate has been directed about interference in the AM band. Many attribute this phenomenon to incorrect protection ratios. Such interference by and large is institutional, ie., a

part of our way of life. Simply stated is that the protection ratios are sufficient but its the signal strength to achieve comparable quality that is not sufficient. This condition requires that service contours be reexamined and redefined in order to provide a higher signal. The 0.5 mV/m signal contour is a vestige of the past.

The second category of change is to adopt rules so that these stations revitalize the area can accommodate the population changes of the past 50 years. In words, serve the people in the area which they are concentrated. For example, 57% of the population now reside within 250 miles of the coastal area of the conterminous United States. A review of the allocation pattern finds that a majority of the lower power AM stations were assigned many many years ago, long before the rapid expansion of the suburban areas. For example, the Washington, DC area has expanded based upon the 1980 Census by 400% since 1950. A majority of the regional stations were assigned before 1950. Few stations were designed to accommodate this population growth. This revitalization includes adopting rules that permits a strong high quality signal to serve its constituency component daytime and nighttime. A higher powered station with a redefined service contour will serve to break the shackles of the past.

The public expects and deserves a high quality signal. AM radio can deliver a competitive high quality signal if permitted to do and it's now time to introduce that change. AM radio has had a rich history and with appropriate changes can enjoy a rich future.

BC [illegible] proposed in the new Docket 87-267

The new protection ratios are currently met within all AM station's daytime principal community contours [5 mV/m as proposed].

It is believed that the protection ratios are fully as substantially met within the daytime 2 mV/m contours. With possible exception of co-channel interference, nighttime principal community contours are substantially free of predicted interference based on that docket.

It is unfortunate that the substantial growth in the principal communities over 50 years has outgrown the principal service contours of many AM stations

→ Q-Factor ?

True AM improvement can be achieved through the use of higher powers, up to 50 kW while retaining existing protection ratios. The lowering of directional antenna "Q-values" defined under Section 73.150 of FCC Rules and Regulations or a Waiver Basis should be considered.

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C.

In the Matter of	)	
	)	
Review of the Technical	)	MM Docket 87-267
Assignment Criteria for the	)	
AM Broadcast Service	)	

Further Comments of du Treil, Lundin & Rackley, Inc.

du Treil, Lundin & Rackley, Inc. (dLR), hereby submits further comments in the above referenced proceeding. While the deadline for submitting comments and reply comments has passed, dLR has discovered significant new information that it feels the Commission needs to have a complete technical record before ordering any new technical standards for the AM band. Accordingly, dLR requests waiver of any rules necessary in order to have the instant comments placed in the Docket record.

The new information was uncovered as part of research dLR conducted to observe the 50th anniversary of its parent firm, A.D. Ring, P.C. Discovered during that effort was an article written by the late Andrew D. Ring, then an engineer at the Federal Radio Commission (FRC)[1] in the April 1, 1934 issue of Broadcasting magazine (Page 15). A copy of the article, entitled "High Fidelity -- Radio's Next Technical Step", is included as an appendix to these comments. The existence of the article was not

[1] Mr. Ring was Assistant Chief Engineer of the FCC in 1941 when he left government employment and established his consulting firm.

known to this firm at the time our comments were originally prepared last fall.

This new information supports the claim of many of those filing in this proceeding that the proposed adjacent-channel protection requirements are unwarranted. By being over-restrictive, they would not serve the cause of AM improvement.

The information in the article comes from a detailed study of the compatibility of the ten-kilohertz channel spacing allocation plan with high-fidelity reception conducted by the engineering staff of the FRC. For purposes of the study, high-fidelity was taken to mean satisfactory reception of high audio frequency components up to eight kilohertz. The conclusion was that noise and interference from co-channel stations rendered such high-fidelity reception possible only with signal levels of 10 mV/m, or greater. (Records show that there were 591 AM stations on the air at the time of the study.)

The proposals in the Rule Making seem to assume that reception with frequency response approaching ten kilohertz should be possible out to the daytime 0.5 mV/m or nighttime interference-free contours of AM stations if adjacent-channel protection requirements are made radically more restrictive. It is implied that, over time, enough of the approximately five

thousand AM stations on the air today will turn in their licenses so that the ones remaining can be protected under the proposed rules and achieve AM Shangri-la[2]. As can be seen from the 1934 article, this reasoning is flawed on both counts.

Arguably, better performance may be available now that the NRSC response curve has been developed. Counterbalancing this improvement, though, is the fact that fluorescent lights, television sets, and dimmer switches, among other interfering devices, have come into common use since 1934.

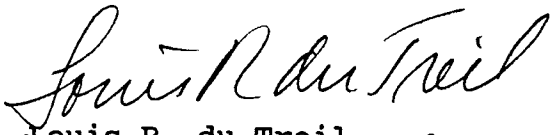
The "AM Radio Interference Study" which was commissioned by the National Association of Broadcasters is apparently the source of the proposed adjacent-channel protection requirements. It does not supersede the 1934 study, however, as noise and co-channel interference were not considered in the listener tests that evaluated adjacent-channel interference. The results of the National Association of Broadcasters study, if valid, are applicable only if used to protect signal levels of sufficient strength to overcome noise and co-channel interference in high fidelity receivers. They certainly do not justify the adjacent-channel protection requirements proposed in the Rule Making.

---

[2]Shangri-la, as described in James Hilton's 1933 novel Lost Horizons, is a remote beautiful imaginary place where life approaches perfection.

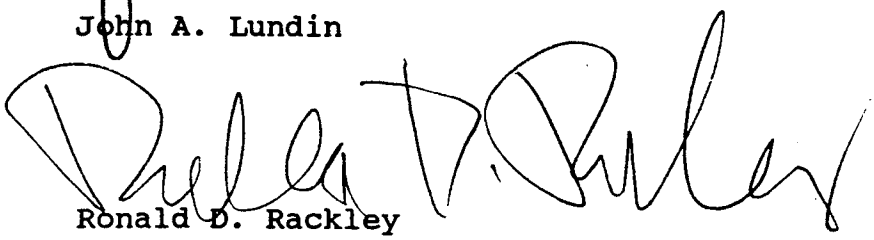
It is obvious from the foregoing that the present AM technical criteria should remain largely unchanged. Rules already adopted to encourage interference reduction in the AM band through private agreements, combined with the proposed 50 kilowatt power limitation for Class III stations, will cause a natural attrition, determined by the marketplace, that will reduce the number of stations in the band and increase high fidelity coverage of the stations that remain. The problems related to spectrum clutter in the AM band will largely take care of themselves in the process.

Respectfully submitted,



Louis R. du Treil

John A. Lundin



Ronald D. Rackley

du Treil, Lundin & Rackley, Inc.
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Washington, D.C. 20036
(202) 223-6700

June 19, 1991

High Fidelity—Radio's Next Technical Step

By ANDREW D. RING
Broadcast Engineer, Federal Radio Commission

Seen as Advance in Program Quality, But Not Yet Perfected; Few Changes in Allocations Needed, With Sets Major Task

HIGH FIDELITY radio is the leading topic of conversation among radio technicians and set manufacturers these days because it is destined to be the next important improvement in broadcasting technique. In this article, one of the foremost authorities of his profession discusses this development, which would transform the radio set from an ordinary hit-and-miss reproducer to a high quality instrument capable of reproducing music in the home precisely as it sounds in the auditorium. Contrary to contentions of manufacturers, Mr. Ring holds that present wave length allocations are adequate for high fidelity transmission and that the problem is primarily in the manufacture of precision receivers.

THE SEVERAL recent demonstrations of high fidelity sound reproduction have greatly interested broadcast engineers, and the question is raised as to how soon broadcast stations can take advantage of the improvements to be derived from high fidelity sound transmission. Most broadcast stations at present are limited in the transmission of sound or audio frequencies between the limits of about 100 and 3,000 or 4,000 cycles per second. This restricted frequency range noticeably reduces the fidelity, clarity or naturalness of the reproduction of the program, especially that part of the program which abounds in high frequencies such as symphony orchestras, etc.

In transmitting frequencies up to 4,000 or 5,000 cycles, all of the fundamental frequencies of ordinary musical instruments are reproduced but many of the upper harmonics are not. These upper harmonics are to a large extent responsible for the quality of musical instruments. This is especially true of such instruments as the snare drum, cymbals, castanets, violin, oboe, piccolo, etc. Of the sounds that require the reproduction of frequencies above 5,000 cycles for naturalness, hand clapping, footsteps, key jingling, rattling paper, pouring water, etc., are good examples.

50 to 8000 Cycles Adequate

THE LIMIT of the low frequency to not less than 100 cycles impairs the quality of the instruments having very low fundamental frequency such as the bass drum, bass viol, bass tuba, organ, etc. It is considered that if all low frequencies down to 40 cycles are reproduced without serious loss, all ordinary instruments would sound perfect to the trained observer except possibly the bass viol, bass tuba, and organ.

It is estimated that transmission of all sounds between 40 cycles and 15,000 cycles would result in very near perfect reproduction. However, the results of several tests on a symphony orchestra as given in an article by W. B. Snow in the July, 1931, *Journal of Acoustical Society of America*, reveals that if all frequencies above 7,000 cycles and below 50 cycles are cut off, only 50 per cent of the observers could clearly determine the fact; and, in another type of test when frequencies up to 8,000 cycles were transmitted, the observers pronounced the results 90 per cent perfect. When the frequencies down to 50 cycles were transmitted, the result was 99 per cent perfect. Therefore, from a consideration of naturalness of reproduction alone, and not the several involved factors which will be discussed later, the range from 50 to 8,000 cycles should be adequate for the average listener.

The limit in the audio frequency transmission range is due to limitations in the broadcast transmitting equipment which may be due to restrictions in one or all of the following component parts of the typical broadcast station: (1) microphone, (2) audio amplifier, (3) telephone line over which the program is sent and (4) radio transmitter. All of these items are now available in forms which can transmit frequencies from about 50 to 8,000 or 10,000 cycles per second. However, there are other considerations in the accomplishment of high fidelity reproduction than just the audio characteristic being flat within two decibels from 40 to 10,000 cycles, which must be met before such a range can be successfully transmitted. This will be discussed in more detail later, though the purpose of this article is not to discuss the details of equipment but rather the present allocation of broadcast frequencies and the effect if all stations were to extend the transmission of high frequencies.

The Present Setup

BY THE present allocation, broadcast channels are separated by 10 kilocycles, and it is said frequently that this automatically limits the side bands or audio frequencies that may be transmitted by broadcast stations to 5 kilocycles. If higher frequencies were transmitted, the side bands therefrom, it is argued, would overlap and cause interference on adjacent channels, and, accordingly, if the equipment were installed for high fidelity sound reproduction, the present plan of allocation cannot accomodate the transmission, and before further improvement can be made a new allocation would have to be made separating the station by more than 10 kilocycles. This, the writer believes, is not strictly true and the purpose of this article is to set out some of the elementary principles of allocation showing just how much interference would be caused if side bands of 8 kilocycles from the carrier frequency were transmitted, that is, audio frequencies up to 8 kilocycles.

MR. RING

Side Band Widths Unrestricted

AT THE PRESENT time there are no rules and regulations of the Commission limiting the width of the side band transmission, and any broadcast station may be so operated that side bands even up to 10 kilocycles or more are transmitted without violating the terms of the license. The Commission has not promulgated any regulations on the width of the side bands for the mere reason that it has not been necessary and no case has been pointed out where interference was due to side bands more than 5 kilocycles from the carrier frequency, though today several stations operate with side bands well over 5 kilocycles.

Virtually all of the broadcast receivers now in use and offered for sale are limited to approximately 3,000 or 4,000 cycles. Accordingly, it would be of no avail to have high fidelity broadcast transmission without similar reception. The writer has listened to specially designed high fidelity broadcast receivers tuned to high fidelity broadcast transmission and noted the improvement therefrom, and unquestionably the next step in improving technical broadcasting is in extending the audio range.

To make an estimate of the various allocation requirements for high fidelity broadcasting conclusions derived from several graphs not printed here will be given.

The first and most important graph in the study of high fidelity in broadcasting is the one showing the distribution of the signal throughout the audio spectrum. Messrs. Sivian, Dunne and White have published an article in the January, 1931, *Journal of Acoustical Society of America*, which goes into this phase very thoroughly. From this article it is seen that the maximum energy or signal from a 75-piece orchestra falls in the frequency band from 125 to 250 cycles in that at 8 kilocycles the signal is approximately 45 decibels lower in intensity. Or, in other words, the average signal at 8,000 cycles is approximately 1/190 of the average signal between 125 and 250 cycles. If the transmitter is modulated 100 per cent by the higher signal, then the intensity at 8,000 cycles would account for the slightly more than one-half per cent of modulation.

What Receiver Would Need

ANALYSIS on several different orchestras, musical instruments, etc., reveals that the intensity at 8,000 cycles is approximately one per cent of the maximum energy in the spectrum. From this several conclusions may be drawn. If the signal intensity from present transmission is just sufficient to override the noise level (signals 20 times the noise level) then the signal would have to be increased approximately five times for satisfactory high fidelity reception or a signal intensity of approximately 10 to 20 millivolts per meter would be required for satisfactory high fidelity reception in residential city areas. That is, the noise level alone would prevent high fidelity reception except in areas around the transmitter bounded by the 10 to 20 millivolt contour.

In regard to interference from stations on adjacent channels, two 1-kw. stations 10 kilocycles removed in frequency will be considered. The separation recommended by the engineering division of the Commission under these circumstances is 200 miles. The effective signal at night from a 1,000-watt station 200 miles distant would be approximately one-half millovolt per meter. Assume that the high fidelity receiving set to be designed has a selectivity such that at 10 kilocycles the undesired intensity must be three times the desired to

(Continued on page 40)

High Fidelity—Radio's Next Step

(*Continued from page 15*)

produce the same signal. Then the signal from the undesired station 10 kilocycles removed and 200 miles distant at the 20 millivolt per meter contour of the desired station would be approximately 40 decibels less in intensity. This is approximately the noise level so that interference from stations with the adjacent channel separation recommended by the engineering division and natural noise would fall at about the same place. This is a very important conclusion and indicates that no wider frequency separation is needed between channels for high fidelity transmission and reception.

The high fidelity receiving set would need therefore a different characteristic than now accomplished. That is, it needs to be substantially flat to about 7 or 8 kilocycles and then rise rapidly in rejectivity to 10 kilocycles. This, unquestionably, could be accomplished by means of a band-pass filter.

Four Interference Sources

THERE ARE four sources of interference to the reception of high fidelity stations:

1. Man-made electrical noises and static.
2. Heterodyne or cross-talk from stations on the same channels.
3. Cross-talk, monkey chatter, and 10-kilocycle heterodyne from stations 10 kilocycles removed in frequency.

"Monkey chatter" is a term used to denote the beat of the side bands from an undesired carrier on adjacent frequencies with the desired carrier. This inverts the frequency. That is, a 7-kilocycle side band on an undesired becomes 3 kilocycles on a desired carrier. This becomes a source of interference when side bands above 5 kilocycles are transmitted. However, since the energy in the audio spectrum from 5,000 to 8,000 cycles is low and on any given frequency it would be very low. The interference from monkey chatter would be less than that from several other sources. Since high fidelity reception is limited to such a small band around a station, the high fidelity receiving sets should be so designed to operate in any location. This might be accomplished by providing either automatic or manual control for reducing the band width. By this means the receiving set could be rapidly adjusted to the conditions best suited to the reception of any particular station. In listening to distant stations, it is impossible to obtain high fidelity reception due to noise, cross-talk interference from the adjacent channel, but then the receiver could be made more selective for automatically reducing the noise, and heterodyne or cross-talk interference from stations on adjacent channels. However, the monkey chatter from the stations on adjacent channels would not be affected.

For high fidelity transmission it is necessary, as stated above, to transmit all frequencies at approximately from 50 cycles to 8,000 cycles within two decibels of constant. But, since the energy in the 8-kilocycle region is so low the carrier noise level (ripple, hum, tube noises, hiss, etc.) on the carrier transmitted must be reduced to appreciably less than now permissible under the present standards. Also, the amplitude distortion in the transmitter must be reduced materially or harmonics generated thereby would be greater than those from the musical instruments being reproduced and accordingly high fidelity reception would sound worse than if the receiver were limited in frequency range.

The question of volume range also becomes very important for high fidelity reception. In present broadcasting the programs are decidedly monitored or adjusted in volume increasing the low passage and decreasing high passages. This cannot be done if the full emotional element of the reproduction is to be retained.

The ratio of peak energy or volume to the minimum energy in a symphony orchestra is about 70 decibels or approximately 3,000 to 1. The better grade broadcast telephone line will not transmit this range of volume as the upper limit is limited by cross-talk with other line services and the minimum limit is due to natural noises on the line. Good broadcast lines have a volume range of approximately 40 decibels or 100 to 1 in volume. This phase must be corrected before the full emotional element of high fidelity volume range transmission is to be accomplished.

Summary and Conclusions

1. THE PRESENT broadcast frequency reproduction covers a range from approximately 100-150 to 3,000-4,000 cycles per second and the volume range is restricted to well below 40 decibels between high level and low. For high fidelity reproduction the frequency range should be from 50 to 8,000 cycles and the volume range well up into 70 decibels.

2. The present allocation will provide for high fidelity transmission and reception in so far as stations 10 kilocycles removed in frequency are separated by the mileage recommended by the engineering division of the Commission. (See Seventh Annual Report of the Federal Radio Commission, p. 21.). An increase in the channel width to 15 or 20 kilocycles would not materially benefit high fidelity broadcasting except in cases where the mileage separation on adjacent channels is less than the recommended, and as a great many stations would have to be deleted undoubtedly fewer people would be covered by such service.

3. Due to noise level and interference, high fidelity reception can be accomplished only if the field intensity is 10 to 20 millivolts per meter or greater, which falls within a radius of approximately 4 to 10 miles from a 1-kw. station of 15 to 40 miles from a 50-kw. station on the average.

4. For high fidelity transmission, the transmitter must be flat within 2 decibels from 50 to 8,000 cycles. The noise level (ripple, hum, tube noises, hiss, etc.) transmitted must be considerably lower than permissible under the present standard. The amplitude distortion or generation of audio harmonics must also be appreciably lower. The volume range transmitted must be substantially increased over that now possible to transmit over present telephone lines.

5. The receiving set must have the same frequency response, absence of noise and distortion as the transmitter. In addition, either a manual or automatic device should be provided for reducing the side band response and accordingly the high frequency response as the signal decreases in intensity. If an automatic device is employed there should be a further manual control so that in case of low noise and adequate side channel separation, the advantages of high fidelity reception would be had even though the intensity was less than on the average required.

There are certain new developments now in process whereby it appears that some of the above features can be accomplished with greater ease and simplicity than for a long time was thought possible. This is especially true with respects to accomplishing the wide volume range necessary and also prevent over-modulation. If the transmitter is over-modulated in high fidelity transmission, the distortion therefrom becomes far more pronounced than at present. This is because the over modulation produces high frequency harmonics that are now lost. In all there are so many phases and considerations to high fidelity broadcasting that cannot be predicted even with reasonable accuracy so that no definite conclusion can be drawn as to all the requirements though the general principles are fairly well established.

As before stated, high fidelity transmission and reception is the next step in the improvement of technical broadcasting. There are many phases yet to be developed before such broadcasting is accomplished successfully and at present if the actual range were universally extended to 5 kilocycles in frequency and 40 decibels in volume range there would be a material improvement probably satisfactory to 80 or 90 per cent of the listeners.

AM 2

federal register

Thursday
December 12, 1991

Part II

Federal Communications Commission

47 CFR Parts 2, 73, and 90
Radio Broadcast Service, AM Technical Assignment Criteria; Final Rule

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 2, 73, and 90

[MM Docket No. 87-267, FCC 91-303]

Radio Broadcast Service, AM Technical Assignment Criteria

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: This Report and Order (Report) describes the actions resulting from the Commission's comprehensive review of the many regulatory areas which affect the AM service. The three essential and mutually supporting elements which make up the strategy proposed in the Notice of Proposed Rule Making (55 FR 31607, August 3, 1990) and adopted in substantial part in this Report are: (1) Technical Standards, (2) Migration, and (3) Consolidation. The Commission also takes several non-technical actions: (1) Permitting the issuance of tax certificates in conjunction with voluntary arrangements; and (2) relaxing the multiple ownership rules for those proposing changes in facilities that, in either case, would result in a significant reduction of interference in the existing AM band. Additionally the Commission (1) relaxes the rules pertaining to Travelers Information Stations to allow for the authorization (on a secondary basis) of such stations on any assignable frequency in the AM band; and (2) discusses voluntary receiver standards.

Certain other rule changes described in the Notice of Proposed Rule Making (Notice) were adopted in other proceedings with effective dates that were deferred pending the release of this Report. (See the Report and Order in MM Docket No. 89-46, 55 FR 32922, August 13, 1990; the Report and Order in MM Docket No. 88-510, 55 FR 32944, August 13, 1990; and the Report and Order in MM Docket No. 88-508, 55 FR 32925, August 13, 1990. The rules adopted in these proceedings are incorporated into the amendatory text of this Report. Finally, the "AM freeze" that has been in effect since last year, pending adoption of this Report is lifted as of the effective date of the Report.

In view of the undisputed public importance of the AM service, reflected in the record of this proceeding, the Commission believes that innovative and substantial regulatory steps, such as those adopted in this Report, must be taken to ensure AM's health and survival.

EFFECTIVE DATE: Contingent upon approval by the Office of Management and Budget; Notice of the specific effective date will be announced in the **Federal Register** when such date becomes available.

FOR FURTHER INFORMATION CONTACT: Larry Olson, Mass Media Bureau, Policy and Rules Division, (202) 632-6955.

SUPPLEMENTARY INFORMATION:

Paperwork Reduction Statement

Public reporting burden for Form 301 is estimated to vary from 72 hours to 302 hours, 45 minutes, with an average of 192 hours and 31 minutes per respondent, public reporting burden for § 73.30 is estimated to average 2 hours per respondent, public reporting burden for § 73.37 is estimated to average 7 hours per respondent, public reporting burden for § 73.3517 is estimated to average 30 minutes per respondent. These estimates include the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Federal Communications Commission, Information Resources Branch, room 416, Paperwork Reduction Project, Washington, DC 20554, and the Office of Management and Budget, Paperwork Reduction Project, Washington, DC 20503.

This is a synopsis of the Commission's Report and Order in MM Docket No. 87-267 adopted September 26, 1991, and released October 25, 1991.

The complete text of this Report and Order is available for inspection and copying during normal business hours in the FCC Dockets Branch (room 230), 1919 M Street, NW., Washington, DC, and also may be purchased from the Commission's copy contractor, Downtown Copy Center, at (202) 452-1422, 1919 M Street, NW., room 246, Washington, DC 20554.

Synopsis of Report and Order

1. This Report acts on a three-part strategy aimed at resuscitating the flagging AM radio service. Over the years, an increase in channel congestion and interference coincident with a decline in the fidelity of AM receivers has resulted in a shift of AM listeners to newer mass media services that offer higher technical quality and better aural fidelity. Nonetheless, the record established in this proceeding indicates that AM radio continues to hold a valuable place on the communications landscape, and provides a significant number of outlets that contribute to the vital diversity of viewpoints and programming available to Americans. The Commission's goal in opening this proceeding was to facilitate an overall improvement and revitalization of the AM broadcast service, and to effectuate the necessary union of new AM spectrum between 1605 and 1705 kHz with the existing AM band (535 to 1605 kHz).

2. To provide a specific structure for these revitalization efforts, the Commission defined two models of AM station operation in the Notice of Proposed Rule Making (Notice), one for operation in the expanded band and one for operation in the existing band. Model I parameters, for expanded band stations, are intended to take advantage of the fact that there are currently no stations in the expanded band, and therefore define idealized facilities. Model I parameters include fulltime operation with stereo, technical quality competitive with FM, 10 kW daytime power, 1 kW nighttime power, non-directional (or simple directional) antenna, and a 400-800 km spacing between co-channel stations. Model II parameters, for stations in the existing band, reflect the realities in that band—particularly dense station population coupled with wide variations in: Spacing, power, antenna patterns, and interference protection—and represent those attributes toward which the service can reasonably aspire. These include fulltime operation, competitive technical quality, and wide area daytime coverage with nighttime coverage duplicating at least 15% of daytime coverage.

3. The three elements to the strategy adopted in substantial part in this Report are: (1) Technical standards, in which the Commission implements new and revised AM technical standards that should reduce over time the interference with which AM broadcasters must contend in their primary service areas; (2) migration, in which the Commission selectively opens the ten newly available frequencies in the expanded band (1605-1705 kHz) to those existing AM stations which significantly contribute to congestion and interference in the existing band; and (3) consolidation, which affords broadcasters greater latitude and incentive to reduce interference through non-technical means.

4. In the area of technical standards, the Commission most notably: (1) Increases the first and second adjacent channel protection ratios to reduce adjacent channel interference and also

to promote the development of receivers with higher audio fidelity; (2) refines the methodology of calculating nighttime coverage and interference to more accurately measure interference effects, which should lead to an improvement in nighttime reception; and (3) in some cases, requires a 10% interference reduction when modifications are made to AM station facilities, which should gradually reduce the overall presence of interference.

5. As part of the technical standards segment of this action, the Commission modifies those regulations that, by permitting a decline in the quality of existing service, no longer serve to protect the public interest. While the Commission separately addresses these technical items for the purposes of discussion, it remains acutely aware of their interrelationships and their potential impact on the AM service if considered individually.

6. First, under the category of technical standards, the Commission considers reclassification/power increases. In reaching a decision on this issue, the Commission addressed three elements that are related to the reclassification process. They are: Administrative convenience, changes to protection criteria, and changes in power level restrictions.

7. Administrative convenience, in this instance refers to the process by which the Commission, in administering the AM service, requires considerable coordination with other countries, compliance with several treaties, and participation in a complex notification process with international bodies. The Report finds that confusion would be avoided and administrative burdens on the Commission and on the industry would be greatly eased by adoption of a single classification and nomenclature system. Thus, the Commission changes the current system of AM station classification to conform to the international agreements to which the U.S. is party. Class I stations are redesignated as Class A stations; Class II and II stations become Class B; and Class IV stations become Class C. The Commission also establishes a fourth class of station, Class D, which includes stations that do not have fully protected unlimited-time operation. This last class consists of daytime-only stations, including those that operated with extended hours authorizations, namely current Class II–D, Class II–S, Class III–D, and Class III–S stations. Creation of this separate class helps to focus attention on a category of stations which has its own set of special needs. These stations will be notified internationally as Class B.

8. Stations migrating to the expanded band will be categorized as nominal Class B facilities. Use of the term "nominal Class B" facility is intended to distinguish expanded band stations, awarded by allotment plan procedures, from existing band Class B facilities, governed by assignment procedures. Service contour protection requirements given in § 73.182 of the rules will not apply initially among nominal Class B facilities in the expanded band since the stations spacings prescribed in the allotment plan will form the basis for interference protection rights unless otherwise specified. Because of the adjacent channel relationships, contour protection requirements will apply from the effective date of this Report between stations in the expanded band on channels 1610, 1620, and 1630 kHz and stations in the existing band on 1600, 1590, and 1580 kHz. Additionally, nominal Class B stations in the expanded band are limited by international agreement to a maximum power of 10 kW, as opposed to the 50 kW limit for most existing-band Class B stations.

9. Next, in the Notice, the Commission found that most stations could be reclassified easily, but recognized that certain adjustments in nighttime protection levels for some sub-classes would be necessary. Therefore, the Notice proposed to adopt a nighttime protection level of 2.0 mV/m for all Class II–A, II–B, II–C, and III stations, noting that this would constitute an obvious improvement in protection for all but the Class II–A stations. Only one Class II–A station out of nearly 5,000 AM stations has been identified as being adversely impacted by this proposal. While it is disconcerting to adopt rules that would permit interference to this or any other station, the Commission finds that no new information has been provided that would justify altering its initial conclusion. The Commission continues to believe that the practical impact of the potential for a minor increase in interference to a single station is not of an overriding nature, especially when balanced against the overall benefits of reclassification for the entire AM service. Furthermore, the overall improved protection criteria adopted in this Report could act to offset this apparent effect. Accordingly, the Commission adopts revised nighttime protection levels as proposed.

10. As to the power level question, in order to be further consistent with international agreements, the Notice proposed to increase the maximum power of Class B stations to 50 kW. The Notice indicated that this change would allow stations, currently limited to a power no greater than 5 kW, an opportunity to increase coverage provided that all other technical criteria are met. In practical terms, this would permit stations increased flexibility in tailoring station power and other characteristics to specific needs. The concerns of some commenters regarding additional interference that might result from this action are misplaced because any proposal for an increase in power would have to comply with all applicable interference provisions of the rules, as revised in this proceeding. Accordingly, the Commission's Rules are revised to increase the maximum power for Class B stations, conforming the domestic rules to the international agreements to which the United States is party and bringing U.S. stations to parity with those of other countries.

11. The Report next examines normally protected contours. As explained in the Notice these contours are not only important to individual stations because of their direct relationship to market value and sales price, they also serve as a basis for the Commission's determination of an application's acceptability. There are four matters to resolve at this stage. They are: (1) The Commission's tentative decision to make no changes in normally protected daytime contours; (2) the Commission's tentative decision to make no changes in normally protected contours at night, except in the case of reclassification; (3) the Commission's proposal to eliminate the exception for the first AM facility in a community; and (4) the commenters' suggestion that power increases and changes to normally protected contours are the solution to the problem.

12. The *Notice of Inquiry* in this proceeding (52 FR 31795, August 24, 1987) solicited comment on whether, weighing the current habits of the listening public, the field strength values of these protected contours should be redefined. The overwhelming majority of commenters agreed that the contours should not be changed. Thus, the Notice tentatively concluded that changing these contours would not significantly improve AM service and proposed to leave them unchanged with one exception.

13. The one minor exception to the Commission's tentative conclusion not to change the protected contours was related to the proposal to reclassify stations and adjust nighttime protection levels accordingly. The Notice proposed

to modify the baseline nighttime protection contour for Classes II–A, II–B, II–C and Class III full time stations to uniformly protect the 2.0 mV/m contour. This change would bring a measure of consistency to the new Class B category and would have a minimal impact on assignments.

14. The Report finds that adoption of the proposed value of 2.0 mV/m for the normally protected contour for Classes II and III stations at night, as set forth in the Notice, advances the objective of improving the AM service. It further concludes that modification of any other protected contour would stray significantly from the original purpose of reducing interference levels within the AM band. Because there is now a single class of station that includes the previous Class II and Class III stations, the Commission needs to pick a value suitable for protecting all of the stations in that class. A higher value, such as 5 mV/m, would expose stations currently protected to values less than 5 mV/m to more interference and a loss of service. A value of 2.0 mV/m for the normally protected nighttime contour is the highest value the Commission can select which will preserve the service of essentially all Class II and Class III stations.

15. In a related matter, the Notice also proposed elimination of § 73.37(b), which effectively is an exception to the protected contour criteria and which allows interference within the daytime 0.5 mV/m normally protected contour (up to the 1 mV/m contour) of a station that is or will be the first licensed AM station in a community. The Commission continues to believe that this rule encourages substandard operations and permits increased AM congestion and distorted service areas. Thus, the Report deletes § 73.37(b) of the Commission's rules.

16. The Report now considers E_{min} and noise. The Notice briefly discussed the relationship between the minimum usable field strength, or E_{min},[1] and noise, both atmospheric and man-made. The Notice also discussed various Commission actions taken in the past several years which related to noise within the AM band. The Notice tentatively concluded that there was no compelling reason to revise these factors.

17. The Commission carefully considered all of the widely divergent comments submitted with respect to E_{min} and noise, and concludes that revision of these factors is not warranted. Selection of an appropriate minimum usable field strength value is a complex matter dependent on many variables. Therefore, while it may be true that in some areas of the country, under certain circumstances, the currently protected value of 0.5 mV/m is insufficient to provide an adequate signal, it is clear that in many areas, under other circumstances, it is an appropriate value. It is not evident, based upon the totality of the record in this proceeding, that selection of any other protected contour value would, on balance, provide a more accurate benchmark.

18. Similarly, the Commission cannot conclude from the evidence presented that the 0.1 mV/m contour is inadequate to provide Class I service. It finds that the evidence submitted not of sufficient reliability for the Commission to conclude with certainty that Class I service does not exist in many cases out to the 0.1 mV/m protected contour and thus should not be protected.

19. The intent of critical hours protection for Class I facilities has always been to provide an adequate measure of protection to the wide area service of such stations during the transitional hours after local sunrise and before local sunset when neither daytime nor nighttime propagation characteristics are fully in effect. The Commission's experience over the years has shown that the critical hours protection scheme has successfully provided a reasonable degree of interference protection for this time of day and, therefore, will remain unchanged.

20. Accordingly, the values of minimum usable field strength, E_{min}, will remain unchanged. Protection requirements for Class I facilities will also remain unchanged with respect to both daytime and critical hours protection.

21. Next, the Report examines protection ratios. The Notice proposed no change to the current co-channel protection ratio of 26 dB. For the first adjacent channel, the current protection ratio is 0 dB, groundwave-to-groundwave. The Notice proposed to change this ratio from 0 dB to 16 dB for the protection of daytime and nighttime groundwave service. Also, the Notice proposed that both groundwave and skywave service of Class I stations be protected from adjacent channel skywave interference. In this respect, the Notice proposed to modify the skywave to groundwave protection ratio from—13.98 dB to 16 dB and to include a skywave to skywave protection ratio of 0 dB, a type of interference protection not previously specified. For the second and third adjacent channel, the Notice proposed no change.

22. Regarding the co-channel protection ratio, the Commission considers the record in this proceeding to clearly indicate that no change is required. While the Commission agrees with the comments indicating that "talk" programming requires more than 26 dB of co-channel protection, with the current level of protection, high quality reception of "talk" programming is possible beyond current city-coverage signal levels.

23. With respect to the appropriate level of first adjacent channel protection, the Report first discusses the daytime groundwave service case. The Commission continues to protect service to the normally protected contours (0.1 mV/m for Class I stations; 0.5 mV/m for other classes) and will provide increased protection required for wideband reception. However, as demonstrated in the comments, the adoption of the required 16 dB of additional protection at the normally protected contour (e.g., 0.5 mV/m) would largely preclude most needed facilities modifications, thus effectively freezing the AM band at the current level of adjacent channel interference.

24. Nonetheless, adjacent channel interference is a real concern, particularly for wide band receivers, and some improvement is needed. A pragmatic solution is suggested by the many commenters who stated that a field strength of 2 mV/m is required for satisfactory wide band reception. Since that is 12 dB greater than a normally protected groundwave contour of 0.5 mV/m, a modest increase in the adjacent channel protection ratio, applied at the 0.5 mV/m contour, will serve to enhance both narrow band and wide band reception. Accordingly, the Commission is adopting an adjacent channel protection ratio of 6 dB to be applied at the normally protected contour which will, in practice, provide 18 dB or greater protection to wide band service. Although this is slightly higher than the 16 dB figure mentioned above, the Commission considers this 6 dB increase in protection to be the minimum change in protection required to realize improved reception. As improved receivers are marketed with wide and narrow bandwidth capabilities, listeners will be able to realize an improved and more competitive technical quality wherever AM improvement is achieved in practice.

[1] The value of E_{min} represents the minimum field strength necessary to permit a desired reception quality in the presence of atmospheric and man-made noise.

25. The circumstances surrounding first adjacent channel nighttime protection are significantly different from those of the daytime. The Commission's proposal for daytime adjacent channel protection represents a tightening of the existing protection standard contained in the rules which is applied in a single-signal manner. With the exception of protection to clear channel stations, no nighttime adjacent channel standard now exists. Because the Commission is concerned about the restrictive effects of creating an entirely new adjacent channel standard for nighttime operations, it has reconsidered the initial proposal of a 16 dB value. The Commission is persuaded by the commenters who argue that adoption of such a high ratio would impair the ability of stations to make needed facilities modifications. This is particularly so since the first adjacent channel standard represents a limitation where none previously existed. In order to maximize flexibility, and recognizing that scientific studies show that adjacent channel interference should be reduced in order to improve the AM service, the Commission is adopting a more moderate value of 6 dB.

26. The Commission's proposal for 0 dB first adjacent channel protection to skywave service was not opposed. However, this proposal would preclude hundreds of Class B stations from making any facilities modifications because of the extremely large skywave service areas of Class A stations on adjacent channels. Therefore, the Commission believes that this standard would be unrealistic and counterproductive and it declines to extend adjacent channel protection to Class A stations' nighttime skywave service.

27. The comments have persuaded the Commission to revise its thinking regarding the second adjacent channel protection levels. After careful analysis, the Commission is adopting a prohibition of overlap of the 5 mV/m contours of second adjacent channel stations. Such an action would insure that, within the daytime city coverage contours, full protection from second adjacent channel interference would be obtained. This standard would require station separations greater than those currently required, and is consistent with the NRSC standard.

28. No opposition was received to the proposal in the Notice to leave undisturbed the current third adjacent channel protection standard. The Commission continues to believe that this standard properly balances a station's protection and service requirements. The Commission is maintaining the existing standard of prohibiting overlap of 25 mV/m contours of such stations.

29. Regarding nighttime interference calculations, the Notice of Inquiry (*Inquiry*) questioned whether it would be appropriate to limit increased interference from other stations by considering adjacent nighttime skywave interference in the RSS calculations and by reducing the RSS exclusion value from 50% to 25%. The reaction was mixed, but generally construed the Commission's alternatives to be an insufficient response to the considerable difficulties facing the AM service.

30. In view of the response to the Inquiry, the Notice proposed even tighter protection criteria. The Notice proposed to eliminate entirely the RSS "50% exclusion" methodology and to consider, instead, all signals as potential sources of interference. (In effect, the Commission proposed to use an RSS "0% exclusion" method.) Also, the Notice proposed to consider adjacent channel signals in the interference calculations. The Notice further proposed that each station's individual limitation toward any other station not exceed 1.0 mV/m, with appropriate adjustments for protecting skywave service of Class I stations. Additionally, the Notice proposed to require existing stations that already exceeded this 1 mV/m threshold to reduce their signal to other stations by 10% in order to receive an authorization to modify their facilities. Finally, although no longer required for determination of station protection under our proposal, the Commission proposed that RSS calculations (0% exclusion) would be used to evaluate city coverage of a station and to compute the ranking factor for migration preference purposes.

31. The record in this proceeding convinces the Commission that the proposals set forth in the Notice are sound, reflect the best predictors of interference and service available today, and provide a mechanism to not only prevent continually increasing interference in the existing AM band but also, in some cases, to reduce existing levels of interference. Two of these proposals are fundamental to the Commission's efforts to improve AM nighttime interference calculations. They are RSS 0% exclusion and inclusion of adjacent channel signals. It is noteworthy that the record supports these concepts. The disagreement is not with the concepts themselves but rather with the impact of their application, most notably the lack of flexibility and reduced coverage showings.

32. After further evaluation of the proposals, the Commission recognizes that a key element of these proposals, the shift to the single signal protection concept, is also most difficult to achieve without impacting the ability of some existing stations to modify their operations. The Commission agrees with commenters that the threshold level of 1 mV/m for protection purposes may be ideal, but in many instances it is impractical. The ultimate question is what is the test for significance for these types of situations. The Commission finds that a major difficulty inherent in the proposed rules relates to the need to find a specific value that would define interference as significant and trigger the need for a 10% reduction in signal level. The Commission concludes, that in a mature band such as the AM band, a single value that would represent a significant increase in interference is extremely elusive because of the many various combinations that require consideration. Also, the Commission is not convinced that the discovery of a single value would be translated into tangible benefits since the concept requires voluntary actions of stations (i.e., facilities modifications), the type and quantity of which cannot be predicted, as a prerequisite for a 10% signal reduction. Thus, the Commission is adopting a modified proposal that incorporates the basic ideas and adjusts the remaining ones.

33. The modified approach the Commission has developed adheres to its basic goal of improving the AM service by reducing or restricting increased interference. In effect, this approach provides a balance between the ideal and the pragmatic. The modified approach adopted is as follows. In the determination of nighttime interference, all skywave signals (co-channel and first adjacent channel) are considered. The single signal concept is replaced with an RSS concept that distinguishes among three significant levels of interference. First, the highest interferers are those that contribute to another station's RSS (50% exclusion); these interferers would be required to reduce their contribution to that RSS by 10% if and when they apply for a change in facilities. Second, the next level of interferers are those that contribute to the RSS (25% exclusion) but not the RSS (50% exclusion); these stations would be authorized facilities changes if no increase in radiation is involved. Finally, the lowest level of interferers are those that are no greater than the RSS (25% exclusion) and which would be permitted to increase radiation as long as the RSS (25% exclusion)

threshold is not equalled or exceeded. Essentially, the Commission has used the well-known RSS method with 50% and 25% exclusion values to classify existing co-channel and adjacent channel stations as high, medium and low interferers. High interferers must reduce interference, medium interferers may preserve the status quo, and low interferers may make modest increases. Finally, a new station may be authorized only if it qualifies as a low interferer with respect to any other station on the same or first adjacent channel.

34. The Commission turns now to the relevant concerns of the commenters and the impact of the Commission's modified approach. Three points stand out—flexibility, coverage, and noise. Of the three, flexibility is the most difficult to resolve because it requires a balance between our overall goal of reducing interference in the AM service and the understandable desire of broadcasters to improve their stations. The balance is delicate because as interference restrictions increase, flexibility decreases. Recognizing that the proposed rules would severely limit station modifications, the Commission notes that the modified approach relaxes the restrictions and is not as limiting. The Commission believes that this action may satisfy some of the commenters concerns. Moreover, the Commission is aware that often licensees are required to make changes to their stations because of circumstances beyond their control (e.g., loss of site and antenna maintenance difficulties).[2] Under those circumstances, the Commission would take a close look at the facts presented and rule on the appropriateness of a waiver, just as is available under the current standards. For these reasons, the Commission believes the rules adopted today provide an appropriate balance between two desirable but conflicting needs.

35. With respect to coverage, considerable opposition to the revised RSS approach focused on the resultant reduction of predicted nighttime service which would occur when calculating new interference-free contour values for coverage purposes. It is obvious that inclusion of additional co-channel and adjacent channel contributions would increase calculated RSS value. At the same time the Commission recognizes that a reduction in coverage, even if theoretical rather than actual, translates into an apparently reduced market and possibly reduced revenue for AM licensees. While the Commission believes it would be proper to adopt this more accurate calculation technique, it recognizes the merit in not including all signals in the RSS calculations since no convincing evidence has been presented to warrant a substantial alteration of the currently practiced method of coverage prediction.

36. Including first adjacent channel signals in the RSS calculations and incorporating the new skywave propagation model, will change virtually all nighttime interference-free contour values. Consequently, corresponding coverage maps will also change. As the Commission is maintaining a 50% exclusion for the RSS calculation, the coverage depictions for many stations should not be altered dramatically from those which existed under the previous standards. Therefore, the Commission shall not impose any requirement for a universal re-mapping of service contours. This will be left to the discretion of the individual licensee, or until such time as an application is filed for change in facilities which would itself alter the station's service area.

37. The only exception to use of the RSS with 50% exclusion for coverage purposes is the determination of an improvement factor for a station seeking to migrate to the expanded band. Because there is a need to distinguish between all stations with respect to interference caused and received, an impossibility using a 50% exclusion method, and because the practical problems associated with a reduced coverage depiction will be neither significant nor relevant to the improvement factor process, the 0% exclusion method will be utilized within the context of the expanded band migration eligibility calculations.

38. Finally, the Commission agrees that noise is certainly a factor which warrants consideration; however, based on the record of this proceeding, the Commission is not persuaded that interfering signals from other stations are less significant than ambient noise in the evaluation of the overall problem. Therefore, any solution which concentrates primarily on overcoming local noise thresholds, such as universal power increases, can only serve to exacerbate the existing problem by also raising the base interference level.

39. The Commission notes that, because Class IV stations are unique with respect to nighttime protection in that extremely large numbers share the same channel and have no specific nighttime restrictions, there would be little benefit in applying to Class IV stations the same rule changes that are being considered for other classes of stations. Thus, the rules the Commission adopts regarding nighttime interference will not apply to Class IV stations except with respect to the determination of coverage.

40. Next the Report discusses nighttime enhancement. Recognizing that daytime-only stations face serious disadvantages because of their inability to operate at night, the Commission has initiated several rulemaking proceedings that addressed this limitation on station operation and sought ways to permit fulltime operation to the maximum extent possible, consistent with sound engineering practice. Significantly, actions taken in a series of proceedings have allowed many daytime-only stations to operate during nighttime hours. In one of these proceedings, MM Docket No. 88-509 (See Notice of Proposed Rule Making, 53 FR 45525, November 10, 1988, and Memorandum Opinion and Order, 5 FCC Rcd 5192) the Commission proposed further steps to enhance the opportunity for daytime-only stations to improve their nighttime operations while at the same time maintaining existing interference protection requirements. The Notice observed the close relationship between the MM Docket No. 88-509 issues and those considered in this proceeding and concluded that the issues and record should be incorporated in this proceeding.

41. In essence, therefore, the Notice, in accordance with MM Docket No. 88-509, proposed the relaxation of current restrictions that prohibit Class II-S and Class III-S stations from establishing separate nighttime antenna systems and upgrading their nighttime operations to facilities that do not meet the minimum protected power level of 250 watts (or the equivalent 141 mV/m at 1 km). Also proposed were changes to requirements regarding minimum power, city coverage or minimum operating schedule. Proposed also in MM Docket No. 88-509 was the option of defining all such nighttime enhancement proposals as "minor changes"—even those requesting power increases.

42. Finally, the Commission proposed that unlimited-time Class II and Class III stations be allowed to reduce their nighttime power to a level below the established minimum and thus be

[2] The Commission also recognizes that certain circumstances that may be beyond the control of the licensee would prevent a 10% reduction because of a conflict with other Commission rules, such as those requiring compliance with minimum efficiency criteria or where specification of the standard pattern "Q" factors would not achieve proper tolerance. See 47 CFR 73.150. In such situations the Commission would allow, on a case-by-case basis, for some flexibility for exceptional cases where reduction could not be performed without the waiver of other technical requirements.

reclassified as Class II–S or Class III–S stations. Under these circumstances, the Commission reasoned that such stations would lose their rights to interference protection and that city coverage and minimum operating schedule requirements would be retained for stations which elect to make these voluntary power reductions. Comment, however, was sought on exempting such stations from the coverage requirements.

43. After a thorough review of this matter, the Commission adopts changes in the current rules to facilitate both the technical enhancement of nighttime operations by Class II–S and Class III–S stations and the overall improvement of service to the listening public. The Commission will also permit those unlimited-time Class II and Class III stations that find it advantageous to do so, to reclassify their nighttime operations as Class II–S and Class III–S and to operate under the same terms as existing Class II–S and III–S stations. The Commission believes that these changes will aid in the overall effort to permit daytime-only stations the opportunity to provide meaningful nighttime service and to provide added flexibility to fulltime stations who are suffering economic difficulties.

44. With regard to enhanced nighttime operations for Class II–S and III–S stations, the Commission will now permit such stations to increase their nighttime power from the level originally authorized to any intermediate level below 250 watts (or the 141 mV/m at 1 km radiation equivalent). Such stations will also be permitted, when they are operating below the 250-watt level (141 mV/m at 1 km), to use operating parameters which differ from their daytime antenna values and to operate these new systems at either their existing daytime or at new nighttime sites.

45. Further, the Commission has decided that applications filed by stations seeking to implement enhancement proposals will be processed as minor changes under § 73.3571(a)(2) of the rules. Section 73.3571(a)(1) of the rules defines "major change" applications as those that propose an increase in power, or a change in frequency, hours of operation or station location. The only definition in that section that is relevant to these proposals is the one regarding an increase in power. This action does not alter the basic right of parties to file informal objections under the minor change processing procedures nor does it diminish Commission scrutiny since the engineering analysis applied to major and minor change applications is essentially the same.

46. The Commission will also permit unlimited-time Class II and Class III stations to reclassify their nighttime operations as Class II–S and Class III–S stations and to operate below 250 watts (141 mV/m at 1 km equivalent) under the same terms as existing Class II–S and Class III–S stations. Since AM applications for power reduction are currently treated as minor change applications, it would be logical to extend that treatment to these cases. Thus, such applications will be processed as minor changes under § 73.3571(a)(2) of the rules. These stations will receive no protection from interference, will be required to provide protection to unlimited-time stations, and will be exempt from meeting nighttime city coverage and minimum operating schedule requirements.

47. Additionally, the Commission will permit Class II–S or Class III–S stations to use rooftop or other unconventional antenna systems at night. Such stations may benefit from using inexpensive, short, and easily mounted antennas which are cost-effective and may promote expedited nighttime service. However, the Commission will not compromise the efficacy of its interference reduction efforts for this purpose and therefore, will require detailed engineering showings to accompany any application where such an antenna is proposed, as well as a subsequent proof-of-performance to demonstrate proper system operation.

48. The Report now reviews the issue of advanced antennas. The Notice observed that the National Association of Broadcasters (NAB) was conducting tests on new types of antenna systems that might improve the AM broadcast service. The Notice thus proposed to defer changes in the rules until testing and analysis of such systems had been completed. Initially, the Commission commends the NAB and others for their continuing efforts directed at the development of improved antenna systems for use in the AM band. The Commission encourages the continuation of these and other related antenna projects which show promise for the improvement of this service.

49. At issue is whether it is appropriate at this time to revise the Commission's Rules in order to accommodate standardized versions of either or both of the antenna systems described above for use in the AM service. As noted in the comments, results of the skywave suppression antenna have been inconsistent and the Report finds that no further Commission action is warranted at this time. Results of the low profile antenna are more encouraging. However, Commission action on the low profile antenna at this juncture would be premature as it would be based upon a limited record of actual field test data. Accordingly, the Commission encourages further testing of this antenna design and, to the extent possible, intends to give favorable consideration on a case-by-case basis to any requests which might help develop the record of actual field test data. Commission action on a standardized version of the low profile antenna will be deferred pending the development and analysis of such a record.

50. The Report reviews split frequency operations next. Split frequency operations utilize one assigned carrier frequency during daytime hours and a second carrier frequency during nighttime hours of operation. Such operations could be attractive to daytime-only stations which are unable, due to technical restrictions, to use their daytime frequency for nighttime operation, as well as to new fulltime stations which cannot find a viable single channel for both modes of operation. Because of the greater level of complexity of split frequency operations and the potential for increased preclusion of other conventional facilities, split frequency operations should generally be disfavored. However, the Commission finds that under very special and unique circumstances, the public service arguments for authorizing such an operation may outweigh the aforementioned liabilities. The Commission will consider waiver requests where sufficient supporting technical information is submitted to establish that no preclusion to other full time stations would occur, and that the greater public interest can be achieved through issuance of such an operating authority. Nevertheless, the Commission does not conclude that adequate justification exists to create a separate body of rules to govern such operation. Therefore, the Commission amends § 73.3516 of the rules to more clearly exclude split frequency operations.

51. In summary, in this section of the decision specifically dealing with technical standards, the Commission has: (1) Adopted new first and second adjacent channel protection standards, (2) revised nighttime coverage and interference calculations, (3) allowed possible enhancement of nighttime service by certain Class D stations and, most importantly, (4) adopted a rule that would reduce interference to some stations when certain facilities

modifications are authorized. As a group, these rules should lead to a significant, although gradual improvement in AM signal quality.

52. The next segment of the Commission's strategy for rejuvenating AM service is the selective migration of existing AM stations into the expanded band. This migration offers a unique opportunity for the improvement of AM broadcasting. By adopting appropriate rules for the use of the expanded band, migrating stations will operate in a new environment where Model I service should be achievable by all stations. Furthermore, after the completion of the migration process, there should be a general reduction in interference levels in the existing band, helping achieve the goal of Model II service for existing stations. These changes should benefit all licensees and the public as a whole as the quality and perception of the AM service improves. However, the extent of improvement depends, in part, upon the selectivity of the migration process. Migration of AM stations from the existing band should reduce interference and congestion in the existing band and should offer a prompt method for establishing service in the expanded band. We now consider the various issues that must be resolved in order to accomplish these goals.

53. In this section, the Commission addresses the many issues related to the migration process. They are: (1) Wide station separations and low interference levels; (2) migration eligibility; (3) existing stations causing interference and preferred migrators; (4) allotment or assignment options; (5) sample allotment plan; (6) the selection process for migrating stations; (7) ownership limitations and transition period; (8) expanded band technical standards; and (9) city coverage for expanded band stations.

54. First the Report looks at wide station separations and low interference levels. Migration of AM stations from the existing band into the expanded band is a fundamental feature of the Commission's plan for AM improvement. In the Notice, the Commission expressed its preference for an expanded band environment which would utilize relatively wide spacings between stations to produce reasonably low interference levels. The Notice also reflected the Commission's initial reservations regarding the use of elaborate multi-tower directional antenna systems in the expanded band, stating instead our preference for nondirectional or simple directional antenna systems. In this regard, the Notice discussed the appropriateness of the characteristics of the Model I facility for the expanded band. Consistent with this Model I definition, the Notice made a preliminary estimate that 25 to 30 stations per channel could be accommodated in the expanded band.

55. One of the Commission's goals in this proceeding is to create an expanded band environment with relatively wide station separations which would result in reasonably low interference levels. The Commission continues to believe that adherence to carefully crafted expanded band characteristics, such as the Model I parameters, is essential to accomplish this goal.

56. The parties that maintained that the Model I technical characteristics are not consistent with the Commission's service goals base their arguments on studies that assumed that our desired value for E_{nom} was to be used as the value for the nighttime interference-free contour and protected accordingly. Interference prevention in the expanded band will be based upon the station separations of the allotment plan rather than a requirement for case-by-case protection of a nighttime interference free contour as is used in the existing band. The Commission's initial calculations performed at the time of the Notice yielded predicted nighttime RSS values considerably higher than 2.0 mV/m. The initial estimate of 25 to 30 stations per expanded band channel was intended to represent the potential upper limit of the number of stations that could be accommodated per channel. Clearly, this estimate was made in an environment of considerable uncertainty with regard to many pertinent parameters. It was never the Commission's intention that the 25 to 30 station per channel estimate be viewed as a specific primary goal for the expanded band to which other considerations would be subordinate.

57. While the Commission will require expanded band operations to use at least Model I parameters, there may be special cases which warrant the authorization of other than Model I parameters. In such situations, the protection to be afforded co-channel and first adjacent channel allotments from skywave and groundwave interference in any part of an allotment area shall be equivalent to the protection afforded by Model I facilities implementing the designated allotment and will be determined on a case-by-case basis.

58. An example of a variation from the Commission's general concepts relates to the potential for allotments to be located in coastal areas. In such situations, it may be appropriate to space allotments at shorter distance intervals and to specify a simple directional antenna system (2 or 3 towers) in order to provide full protection to all stations. The Commission does not anticipate drastic short-spacing of facilities which would require deep directional pattern nulls, but rather moderate degrees of suppression to compensate for marginally short-spaced allotments. In situations such as these, where a major lobe of the pattern could be directed out to sea, with no potential for interference, consideration could be given, on a case-by-case basis, to the possibility of 10 kW nighttime power.

59. Regarding migration eligibility, the Commission decides to restrict initial eligibility for expanded band allotments to existing AM licensees. The Commission is convinced that such a restriction is essential to achieving the level of interference and congestion reduction in the existing band which might revitalize its competitive standing. Permitting new applicants, whose use of an expanded band channel would contribute nothing to reducing interference or congestion, is simply inconsistent with these requirements. (Consistent with *Ashbacker Radio Corporation* v. *FCC*, 326 U.S. 327, 333, n.9 ((1945)) and *United States* v. *Storer Broadcasting Co.*, 351 U.S. 192 ((1956)), the Commission is permitted to restrict initial migration eligibility to existing AM stations.) The Commission also elects not to include Class IV stations as eligible migrators.

60. The Commission further decides against minority, female or educational service set-asides in the expanded band. In sum, given the level of interference and congestion in the existing band and the significant constraints imposed by quality considerations on the expanded band's capacity, the Commission does not believe set-asides or reservations for applicants which will not contribute to the improvement of existing band conditions are feasible at this time.

61. The Commission does recognize, of course, that increasing the levels of minority and female ownership promotes diversity and therefore advances the public interest. The Commission also recognizes that in some areas there may be a desire for additional public radio outlets and that existing spectrum in the FM band may not be sufficient to fulfill that desire. The difficult choices made here do not suggest any diminished concern on the Commission's part for the benefits which the existing minority and female preference policies and educational reservations have long provided. Rather, they reflect the hard reality that overall

AM improvement will require all available resources. The Commission notes, of course, that to the extent initial migration to the expanded band does not exhaust its capacity, new applicants, including noncommercial educational parties, and minority and female applicants whose comparative preferences would be fully effective, will have an opportunity to seek authorizations.

62. The Report reaches several conclusions regarding the third migration issue of existing stations causing interference and preferred migrators. First, after careful consideration, the Commission finds that revising the priority scheme through an emphasis on stations receiving interference, as opposed to stations causing interference, would be counterproductive because this would stray from the objective in this proceeding—the reduction of congestion and interference in the AM band.

63. The Commission believes that granting a preference to a station migrating to the expanded band if the station currently provides a community its only local service is not warranted. A first local service preference is, in some contexts, a sensible corollary of the Commission's obligations under section 307(b) of the Communications Act to provide a fair, equitable, and efficient distribution of radio services. In the present situation, however, the local station is already in operation. Therefore, the Commission's refusal to grant such a preference does not foreclose the availability of local service in the affected community, nor would grant of the preference in any way improve the distribution of stations.

64. In regard to making a specific allocation to TIS on 1690 and 1700 khz, this step would impair the expanded band's ability to accommodate preferred migrators. Minimizing interference to primary stations and providing maximum site selection flexibility for TIS are best achieved by opening the entire AM band to TIS.

65. The Commission continues to believe that fulltime stations that would reduce interference and congestion by moving to the expanded band represent the most beneficial migrators and that comparing improvement factors is an appropriate basis for selecting between petitioners that desire to migrate. In this fashion, the petitioner that brings the greatest relief from interference and congestion will be selected.

66. The Commission also finds the comments supporting a daytime improvement factor sufficiently persuasive to allow for altering the initial approach, as proposed in the Notice, to some extent. The Commission is adopting a revised improvement factor scheme which incorporates a preference factor for daytime interference in addition to the proposed factor for nighttime interference. In recognition of the importance of reducing daytime interference, the Commission is adopting the same approach for calculating the daytime improvement factor that was proposed in the Notice for the nighttime, that is, the ratio of the area of daytime interference caused (co-channel and adjacent channel) to the area of daytime service provided. This method is a logical extension of the nighttime interference factor.

67. However, where nighttime interference and service is determined using the Root-Sum-Square (RSS) method, the calculation of daytime groundwave interference and service is based on the amount of contour overlap adjusted for contour protection ratios. That is, if the normally protected contour of one station is overlapped by the interfering signal of another station on the same or first adjacent channel, the amount of interference caused is equal to that portion of the overlapping area in which the ratio of the desired signal to the undesired (interfering) signal is less than the co-channel or first adjacent channel protection ratio, as appropriate. The daytime service area of a station is equal to the area within its normally protected contour less any area lost to interference as determined above. The Commission will not consider the effects of stations operating on second and third adjacent channels, both because the rules regulating second and third adjacent channel spacings permit such stations to operate close to each other (well inside the normally protected contours) and because such rules are intended to control receiver cross-modulation and inter-modulation problems and do not lend themselves to determinations of areas of interference.

68. In calculating the daytime contours, theoretical conductivity values will be used for the purpose of determining the daytime improvement factor. Although it would be possible to use measured conductivity data in connection with the contour calculations for the improvement factor, the Commission concludes that the benefits of this approach would be very minimal. In order to use such data fairly, a complete search of all available measurement data for all stations would be necessary. Even with all measured conductivity values considered, the Commission believes that, with few exceptions, the effect of the measurement data would even out and there would be little overall impact on the ultimate ranking of prospective migrators.

69. The improvement factors for daytime and nighttime are defined as the ratio of daytime and nighttime interference caused to the amount of daytime and nighttime service that the station provides. Each improvement factor will be calculated independently and then, both improvement factors for the daytime and nighttime will be added together, thus giving equal weight to each factor. Given that interference tends to be greater at night and interference-free service areas are greater in the daytime, the improvement factors will still tend to favor reductions in nighttime interference.

70. To summarize, if no fulltime station requests an allotment in a given area, the next priority will go to daytime-only stations. Daytime-only stations located within the 0.5 mV/m–50% skywave contours of Class I stations and which are licensed to serve communities of 100,000 or more, that currently lack a local fulltime aural service, will be considered as having first priority among daytime-only facilities. This will give the Commission the opportunity to make a fulltime allotment to several medium-sized cities in or adjacent to major metropolitan markets that now lack a local fulltime aural station and have no reasonable prospects for obtaining one. The next priority will go to other daytime-only stations, consistent with the improvement factor calculation methodology described above that ranks stations according to which ones cause the most daytime interference in relation to the service provided. As discussed in more detail in the AM Stereo section, stations within each priority group that propose to broadcast in AM stereo will be awarded a preference.

71. The fourth area of consideration in the migration segment of this Report is allotment or assignment options. These are the planning methods under consideration for the development of the expanded band. Assignment planning would enable the Commission to maximize the number of stations on each channel. Such a method would require each applicant to choose a specific site and custom-design the station's technical parameters such as frequency, power and antenna systems to protect other assignments. By contrast, allotment planning requires the Commission to perform the initial planning by specifying for each allotment an area within which a station on a given channel may be established.

with generally fixed technical parameters.

72. The Commission finds that the development of a flexible allotment plan for the expanded band is the best means of initiating service in the new band consistent with our overall AM improvement goals. Such a plan should allow small variations in inter-allotment spacings to: (a) Permit sufficient flexibility to derive an allotment plan that would satisfy the needs and interests of licensees that desire to migrate and (b) ensure that the expanded band would be as interference-free as possible. Also, the Commission believes that a site tolerance on the order of 20 km would be desirable to define the allotment area. This approach will enable the Commission to establish Model I service in this new spectrum, while ensuring that the site location requirements of preferred migrators can be accommodated.

73. Next, the Report looks at the sample allotment plan in considering the migration portion of this decision. The purpose of the sample allotment plan is to illustrate the methods that will be used to create the final plan. The sample allotment plan the Commission has developed is based upon the voluntary letters of intent filed in response to the Notice. The resultant sample allotment plan is included in appendix D of the full Report. It should be noted that there are still some uncertainties to be resolved regarding use of the expanded band in international border areas. Work continues on bilateral negotiations to finalize agreements on this matter. However, parties are advised that the sample allotment plan is subject to possible revisions, particularly in border areas. Since the sample allotment plan is primarily for illustrative purposes, these potential discrepancies are of little consequence.

74. The Report next considers the selection process for migrating stations. The Notice proposed to announce a filing window, within which petitions for authority to move to the expanded band could be filed. Unlike the present application process, no showing would be required for the proposed new operation; technical information would address only the petitioner's currently licensed station. All candidates would be required to operate Model I facilities (stereo optional) unless restricted by international agreements or special circumstances that warrant variations. Should the Commission rule favorably on the petition, it would specify the frequency to be used and any additional pertinent technical details. To receive an assignment, successful petitioners would then be required to file a complete application on FCC Form 301.

75. The Commission remains convinced that the general approach outlined in the Notice is both a viable and an efficient approach to administering the selection process. The following summarizes the steps involved in developing the allotment plan:

(a) The Commission will issue a Public Notice announcing a filing window during which AM stations may file a petition for establishment of an allotment in the expanded band. No filing fee will be required for such petitions. After the filing window closes, the Commission will issue a Public Notice (for information purposes) that lists all stations that filed petitions.

(b) The Commission will extract relevant data from the petitions and enter the information into the database.

(c) The Commission will rank all petitions in accordance with the priority groups and improvement factors described in the Report and Order. The priority groups are: (1) Fulltime stations ranked according to sum of daytime and nighttime improvement ratios of: The composite area of interference caused, to the areas of service provided; (2) daytime stations located within the 0.5mV/m–50% skywave contours of Class I stations which are licensed to serve communities of 100,000 or more, that currently lack a fulltime aural service; (3) daytime-only stations ranked according to the ratio of: The composite area of daytime interference caused, to the area of daytime service provided.

(d) Based upon the overall ranking of the petitions performed in step (c), the Commission will produce the Allotment Plan.

(e) The Commission will then issue a Public Notice identifying the stations that are eligible to apply for authorizations associated with specific allotments. Stations not selected for migration will be given thirty (30) days to file for reconsideration of the Commission's action with arguments limited to addressing errors in the selection process.

(f) After the allotment plan has become final and no longer subject to Commission reconsideration, the Commission will enter the allotment into the Commission's AM Engineering Data Base. This entry will include: Location, frequency, whether or not AM stereo is to be used, and other generic technical information with regard to the particular allotment.

(g) Stations selected for migration will be afforded sixty (60) days from the date of allotment notice becoming final in which to file an application for a CP on the allotted channel. The application should be filed on Form 301 and must be accompanied by the normal filing fee for such application.

(h) After acceptance of the application for filing, the Commission will then put the application on a cut-off list. The application will then be subject to petitions to deny but not to competing applications.

(i) After grant of the CP application and construction of the authorized facilities, the permittee will then file a covering license application on FCC Form 302. Licenses for stations in the 1605–1705 kHz band will be issued for a term that is concurrent with the existing license for the operation in the 535–1605 kHz band.

(j) One year after the initial allotment plan has become final (see (f) above), those allotments provided for in the initial allotment plan that have not been authorized (or for which timely applications are not pending) will be deleted from the Commission's data base and the Commission will open a second filing window to allow for petitions by existing stations to migrate to the expanded band.

(k) Upon completion of the second filing window for petitions to migrate and the subsequent authorization procedures, the Commission will continue to monitor the migration process to assess the potential for adding additional stations to the band. As part of that assessment, the Commission will determine whether additional allotment windows will be utilized or whether to implement a traditional assignment scheme to best maximize the remaining available spectrum.

76. The Report now examines ownership limitations and a transition period. The favorable comments that the Commission has received in response to the proposals set forth in the Notice reinforces the Commission's initial conclusion that temporary dual ownership and operational flexibility are essential to a successful transition to the expanded band. The Commission therefore finds it appropriate to adopt new ownership rules.

77. The Report adopts the proposal to add a note to the multiple ownership rules creating an exception to the duopoly rule that would permit the simultaneous ownership and operation of an expanded band and an existing band station with overlapping 5 mV/m contours for a fixed transition period initially set at 5 years. After the expiration of the transition period, the license for the existing band station will

be surrendered. Considering the emphasis placed by commenters on flexibility regarding this issue, the Commission will monitor progress in the use of the expanded band during this period and grant an appropriate extension if factors affecting the overall development of the band warrant such action. These factors would include, among others, the economic viability of stand-alone expanded stations and the penetration of full-band receivers in the marketplace.

78. An exception will also be made to our national ownership rules allowing the numerical limit to be exceeded during this transitional phase. The Commission emphasizes, however, that following construction of the expanded band station, the license that would be issued if all terms of construction were to be met would be conditioned on the eventual surrender of the existing band license. As outlined in the Notice, during the interim the licensee would be prohibited from operating on one of its authorized frequencies and selling its operation on the other frequency. If a station is authorized to move to the expanded band, and the licensee later decides to operate on only its former frequency, the Commission will require it to surrender its expanded band authorization and its allotment would be deleted. After an expanded band station is licensed to operate and the transition period has expired, the existing band operation will go silent. Any application seeking the frequency of the former existing band operation will not "inherit" the previous station's radiation rights, but will instead have to meet the standards in effect at the time of the filing.

79. The Commission will also permit simulcasting on both bands during the transition period. Not allowing for such duplication privileges would only act as a disincentive to broadcasters considering to move to the new band. It is vital to employ all means available to encourage broadcasters and listeners to utilize the new band. Considering the economic ramifications of such a move, we believe that same-service simulcasting for a transition period will only help in our efforts to encourage development of the new service.

80. Finally, the Commission acknowledges the separately pending Notice of Proposed Rule Making in MM Docket No. 91–140 (56 FR 26365, June 7, 1991) regarding the possible revision of the radio multiple ownership rules. The notes that are being added to the current multiple ownership rules in order to accommodate the new AM expanded band will be adjusted, if necessary, to reflect any comprehensive changes that may be made to the rules in that proceeding.

81. In this section, the Commission has adopted an appropriate set of rules for the expanded band which is intended to reduce interference in the existing band, while facilitating the prompt initiation of service in the new broadcasting spectrum. In this way the Commission intends to maximize the benefits to the AM service as a whole, due to the migration process. Of course, no improvement can be realized through these actions alone without the recognition by preferred migrators that such a move would be in their own best interests. The regulations adopted in this Report are intended to achieve that effect. The Commission stands committed to its objective of creating a model AM service in the expanded band that will ensure that the full potential of AM broadcasting can be realized.

82. The Commission now considers expanded band technical standards. The Notice proposed that the technical standards applying to the existing AM band apply generally to operations in the expanded band. These standards include minimum antenna efficiency and ground system requirements, antenna radiation characteristics, and blanketing restrictions.

83. The Commission remains convinced that these initial proposals will best serve the defined goals and the Report therefore adopts them *in toto*. By this action, the Commission establishes for use in the new spectrum, fundamental technical operating criteria that have been applied to AM broadcasting for many years. Use of such criteria links the existing and expanded bands by applying uniform and basic station operational characteristics and provides a known basis for developing the expanded band so as to achieve a significant degree of improvement of the AM service.

84. Lastly under the topic of migration, the Report analyzes city coverage for expanded band stations. The Notice proposed that stations in the expanded band be required to provide nighttime coverage of at least 50% of the principal community by the 5 mV/m or the interference-free contour, whichever value is greater. Nighttime coverage would be calculated using the RSS method without exclusion. Comment was also sought on the option of allowing the 50% coverage minimum on a temporary basis and ultimately returning to the 100/80% coverage standard presently in effect for the existing band.

85. Because the Commission believes that AM improvement will be accomplished only if facility changes which move the AM service in the direction of the adopted models are granted, resolution of this issue essentially requires the Commission, when determining whether to grant an application for migration to the expanded band, to balance the qualitative improvement of the AM service against the current minimum extent of service. Since signals propagate somewhat less efficiently at expanded band frequencies than in the existing band and close-in sites suitable for AM antennas are increasingly difficult (and expensive) to find, the Notice raised the possibility of relaxing coverage requirements to facilitate the relocation of preferred migrators.

86. Regarding those commenters urging that more than 50% coverage of the city be required, the Commission notes that this position does not address the desirability of facilitating preferred migrators, which was the basis for the coverage relaxation proposed. Furthermore, the limitations imposed on expanded band facilities (power limits, poorer propagation at higher frequencies) may make it difficult for migrating stations to serve their communities from existing sites. The Commission does not believe a 50% coverage requirement results in substandard stations. While less rigorous than the present standard, the 50% requirement nonetheless ensures a signal of significant quality to the community of license and the added flexibility of a 50% coverage rule allows the maximum latitude consistent with the goals of community service for stations to locate expanded band facilities at cost effective locations.

87. The final segment of the Commission's strategy for rejuvenating the AM industry is consolidation. In order to achieve the goal of interference reduction in the existing AM band, the Notice sought comment on proposed changes to the Commission's non-technical policies and rules intended to motivate broadcasters to reduce interference in the band. Specifically, the proposed changes included: (1) Granting tax certificates to AM licensees who receive monetary compensation from another licensee to surrender a broadcast license or to modify an existing facility if those acts resulted in interference reduction; (2) relaxing the Commission's multiple ownership rules to permit a licensee significantly reducing interference to co-channel or adjacent channel stations to own AM stations whose 5 mV/m

contours overlap; and (3) possibly reimposing an AM–FM program nonduplication rule.

88. Regarding voluntary agreements, section 1071 of the Internal Revenue Code, 26 U.S.C. 1071, permits the Commission to issue a tax certificate to the seller of a regulated property when the sale will give effect to a new or changed Commission policy regarding the ownership or control of broadcast stations. A tax certificate enables the seller of the broadcast property to defer any capital gain it realizes by acquiring qualified replacement property within two years of the sale or by reducing the basis of other depreciable property. See 26 U.S.C. 1033.

89. These tax certificates involve both the Commission and the Internal Revenue Service ("IRS"). The Commission's responsibility in this regard is to determine whether the "sale or exchange of property" effectuates a new Commission policy. As a result of this proceeding, the Commission adopts a new policy to discourage ownership interests in AM stations causing interference and to encourage existing licensees to enter into voluntary agreements to reduce such interference. It is the Commission's view that improvement in the technical quality of the AM service will promote the public interest objective of an overall competitive radio broadcasting service. *Cf. Telecator Network of America*, 58 RR 2d 1443 (1985). To that end, the Commission will issue tax certificates to AM licensees receiving financial compensation for surrendering their licenses for cancellation. The tax certificates will be issued upon the surrendering of the AM license for cancellation.

90. These tax certificates will only be issued in response to agreements filed within three (3) years of the effective date of this Report. The Commission considers such transactions "necessary and appropriate to effectuate" its new policy of encouraging the reduction of interference in the AM band. The Commission notes, however, that the IRS makes the ultimate determination whether the statutory requirement of a "sale or exchange of property" has been met. The Commission further notes that a transaction involving the sale of a station and surrender of its license has traditionally been construed to involve a "sale or exchange of property" within the meaning of section 1071. See Policy Statement on Issuance of Tax Certificates, 92 FCC 2d 170 (1982). The Commission thinks a reasonable argument can be made than an agreement to surrender a license in exchange for payment can be viewed as a sale or exchange within the meaning of section 1071. The tax certificates will be granted by the Commission in the circumstances described above, subject to IRS approval regarding the "sale or exchange of property" determination.

91. The Notice also proposed issuing tax certificates to those licensees that modify their facilities to reduce interference. While the Commission continues to encourage such voluntary agreements, it believes the issuance of tax certificates in such situations to be legally problematic as regards the statutory requirement of a "sale or exchange." The Commission will, therefore, limit the issuance of tax certificates to situations involving a surrender of a license.

92. The Report next discusses the common ownership aspect of consolidation. In order to facilitate reduction of interference in the existing AM band, the Notice proposed to waive § 73.3555(a)(1) of the Commission's rules—the AM duopoly or contour overlap rule—on a case-by-case basis, to permit common ownership of two commercial AM stations with overlapping 5 mV/m contours if an applicant showed that a significant reduction in interference to adjacent or co-channel stations would accompany that common ownership. Simultaneous broadcasting of the same program on both stations would be permitted if the stations served substantially different markets or communities. In order to ensure that the promised interference reduction would result from the joint ownership, the Notice proposed to require applicants to submit, along with their waiver requests, contingent applications for the major or minor facilities change needed to achieve the necessary interference reduction.

93. After careful review of the comments, the Commission adopts the proposal made in the Notice limiting grant or waiver requests to those situations that result in interference reduction to co-channel or adjacent channel stations. In making our waiver decisions, however, the Commission will remain mindful of viewpoint diversity and market concentration and will consider these factors in conjunction with what will be accomplished by an interference reduction proposal. The Commission will require to be filed, along with waiver requests, contingent applications for major or minor facilities changes demonstrating the nature of the interference reduction to be accomplished. In view of the potentially wide range of factual circumstances in which beneficial interference reduction may occur, the Commission declines to adopt a benchmark which a proposal must meet to be considered as one resulting in "significant" interference reduction. However, the Commission will be guided by factors such as those enunciated in our migration selection processes in determining whether a reduction is "significant." Simulcasting on these commonly owned stations will be permitted if the stations serve substantially different markets or communities.

94. Because the radio multiple ownership rules may be modified pursuant to pending decisions developing from the above-cited Notice of Proposed Rule Making in MM Docket No. 91–140, the Commission acknowledges that a future rule revision may allow for commonly owned AM stations without any demonstration of interference reduction. At this juncture, however, the Commission's goal is to improve the overall state of the AM service and to offer incentives to aid in attaining this goal within the parameters of this rule making. Any adjustment or expansion to the limited multiple ownership rule changes in this proceeding will be coordinated with any overall future changes that may be implemented with regard to these rules.

95. The last area of concern in the consolidation portion of the Report pertains to the Commission's AM–FM programming nonduplication rule. The Notice sought comments on issues relating to whether the Commission should impose limits on AM–FM duplication. The Commission generally believes that encouraging separate programming by AM–FM combinations would effectively serve both the goals of promoting diversity and that of reducing interference and congestion in the AM service. However, because of the likelihood of substantially changed circumstances in the AM band, the Commission finds that such limits would currently be premature. Thus the Report does not adopt such restrictions. The Commission will revisit this issue at the end of three years to determine whether, informed by a more certain knowledge of the direction of the AM service, program duplication limitations are advisable.

96. In summary, the changes in the non-technical areas of the Commission's rules and policies adopted in this report will serve to enhance the existing AM service through the achievement of overall interference reduction in the band. Likewise, the Commission's decision to revisit the issue of imposing a program nonduplication requirement in three years will enable the

Commission to assess the impact of today's decisions on the AM service and better evaluate the need for program duplication limits. Moreover, adoption of changes such as the encouragement of voluntary arrangements to reduce interference through the issuance of tax certificates and the relaxation of the multiple ownership rules for those who can demonstrate significant reduction of interference to other AM stations, will help reshape the service and foster long-term benefits so that it can reach its maximum potential.

97. The Notice next proposed that both Model I and Model II stations utilize stereo modulation and sought comment as to what decisions regarding stereo would be useful in this proceeding. Those commenters who opposed a mandatory AM stereo requirement have convinced the Commission that the provision of AM stereo in the existing band should remain a voluntary decision. Arguments of economic hardship are very persuasive for stations remaining in the existing band, since many of these stations are already in precarious financial situations and cannot afford the cost of converting their facilities to stereo operation.

98. However, in the case of AM stations that are migrating to the expanded band, the Commission believes that there is a compelling reason to provide an incentive for the use of AM stereo. The Commission considers AM stereo a valuable asset. Failure to encourage use of AM stereo would send a signal to receiver manufacturers and the public that the Commission is less than completely committed to the provision of a fully competitive service in the expanded band. Additionally, AM stereo operations in the expanded band would provide receiver manufacturers with an added incentive to produce receivers capable of stereo reception for the entire AM band. Accordingly, while the Commission encourages stereo operation in the existing band, it will provide a specific preference for stereo proponents in the expanded band. The incremental expense associated with the provision of AM stereo in a new facility is typically less than the cost of converting an old facility, and represents only a small percentage of the total cost of building a new AM station.

99. To encourage migrating stations to acquire the advanced technology associated with AM stereo at the start, migration preferences will be offered for those existing band stations which, when filing petitions for expanded band allotments, express their commitment to use of AM stereo for their proposed expanded band operation. Under this approach the Commission will favor a migrator who proposes stereo over one who does not, where the difference in their improvement factors is not sufficient to outweigh the benefits of stereo operation.

100. The stereo preference will be applied in this manner. As explained above, petitions for allotments of expanded band channels submitted by existing stations will be arranged in each priority group in order of the improvement factor calculated for each petitioner. Allotments will be made one-by-one beginning with the highest improvement factor. During this process, the Commission may find that an allotment under consideration (candidate allotment) is mutually exclusive with one or more previously selected allotments (established allotments) and cannot be accommodated in the expanded band. The Commission will substitute the candidate allotment for a previously established allotment provided all of the following conditions are met:

(1) The petitioner for the candidate allotment has made a written commitment to the use of AM stereo and the petitioner for the established allotment has not;

(2) The difference between the improvement factors associated with the candidate and established allotments does not exceed 10% of the improvement factor of the candidate allotment;

(3) The substitution will not require the displacement of more than one established allotment; and

(4) Both the candidate allotment and the established allotment are within the same priority group (*e.g.*, fulltime stations).

101. The Report next decides not to provide any specific allocation of an expanded band frequency for Travelers Information Stations (TIS) on a primary basis. However, the support for TIS operation on a secondary basis throughout the AM band (535–1705 kHz) appears substantial. The great number of frequencies on which TIS assignment would be possible would more than offset the loss, in a few areas, of the frequency 1610 kHz.[3]

102. Multiple channel assignment flexibility for TIS offers possibilities of locating TIS where it can function optimally, with the option of selecting a frequency with a recognized absence of interference from broadcast stations, or even to provide multiple channel coverage for a given area. Therefore, the Commission amends § 90.242 of its rules to permit the authorization of TIS, on a secondary basis, on an assignable frequency in the AM band. Since TIS operation is secondary to AM broadcast station operation, TIS applicants must protect broadcast assignments in the 535–1605 kHz band and allotments in the 1605–1705 kHz band. Additionally, changes will be made to part 2, Table of Frequency Allocations, § 2.106 of the rules.

103. The Commission also concludes that no change should be made in the current showings required of TIS applicants. While sympathetic to the requests of TIS interests to augment TIS service to some extent, the Commission finds that the current record lacks the technical specifics necessary for such an action. In addition, the Notice did not contemplate any changes and consideration of such changes is beyond the scope of this proceeding. The next several years should be a period in which significant changes are made in many AM stations' facilities. The Commission does not believe that such a dynamic operating environment is one which is conducive to the development of enhanced technical standards for TIS The resolution of any unique difficulties associated with the installation of a particular TIS can be handled on a waiver basis. The Report determines that the recommendation that TIS operation be permitted in the FM band is also outside the scope of this proceeding.

104. Finally, the Commission turns to the issue of whether receiver manufacturers should be encouraged to modify their designs for AM radios, and, if so, what form that encouragement should take. The Notice proposed to establish criteria for a "single hypothetical model" AM receiver possessing "desirable and yet affordable performance attributes" to be used as a "reference" model to induce manufacturers to "make significant improvements in the performance of AM tuners." The NRSC draft recommendations were proposed as the basis for this model.

105. After a review of the evidence established in this proceeding, the Commission elects to proceed with the proposal as outlined in the Notice to use the recommendations of the NRSC in the spectrum planning assumptions. As stated in the Notice, the Commission intends to treat them as recommendations to the receiver industry, not requirements. In a related

[3] See § 90.242 of the rules in connection with the allotment plan to be developed in order to determine the continued usability of 1610 kHz in any given area.

action, the Commission encouraged AM stations to implement NRSC–1 audio pre-emphasis in addition to requiring them to comply with NRSC–2, which sets the standard for the transmitted AM signal envelope. A logical follow-up to that effort would appear to be the adoption by the receiver manufacturers of the NRSC–3 receiver specifications, which match receiver bandwidth characteristics to those set for transmitters. The Commission will at appropriate intervals publish a list of those receivers that meet the NRSC–3 standard or which are comparable so that consumers can make an informed choice when purchasing AM radios.

106. Although advocated by a number of commenters, the Commission is not including in the receiver model any specifications with respect to stereophonic reception. The two most frequently suggested specifications were that: (1) Any receiver capable of FM stereophonic reception should also be capable of AM stereophonic reception, and (2) all AM stereophonic receivers should be capable of receiving and decoding both the Motorola and the Kahn stereophonic transmission systems. A consumer who chooses to listen to musical programming on FM and news programming on AM should not be forced to purchase a stereophonic AM receiver. Therefore, the Report does not mandate that AM–FM receivers capable of receiving FM stereo signals must also be capable of receiving AM stereo signals. Nevertheless, receiver manufacturers are encouraged to include AM stereo reception capability with NRSC–3 performance characteristics in their receivers.

107. The Notice included proposed rules related to the specific issues addressed in this proceeding as well as a general revision of the existing AM rules. Most comments echoed the Commission's position that the proposed revisions were indeed valuable and necessary from the standpoint of administrative accuracy.

108. A specific rule change proposed in the Notice addressed the lack of specific direction contained within § 73.152 regarding the filing of directional antenna pattern augmentation applications. The proposed language would clearly enunciate the instructions that had been longstanding Commission staff policy. The rule would not include procedures which would promote efficient use of AM spectrum and, with the aid of these instructions, eliminate numerous amendments to applications which are routinely found to be not in compliance with policy. Additionally, the Commission concludes, based on the majority of the comments, that directional pattern augmentation should be available to stations in the expanded band for those operations in need of this procedure where the maximum allowable radiation is not exceeded. Stations would need to consider using this process within the context of maintaining a radiation equivalence toward other allotments or areas of protection where the value of the radiated fields do not approach the maximum allowable limits.

109. On March 29, 1990, we released an Order that curtailed the filing of most applications for new or changed AM facilities. The Commission believes this restriction upon the filing of applications of new and changed AM facilities is no longer necessary and it will be removed as a seventy (70) days from the date of the adoption of this Report.

110. In the Notice the Commission stated its desire to minimize the use of directional antennas in the expanded band. In the relatively few instances that simple directional antennas would be utilized, the Notice proposed significantly less burdensome requirements for measurement data for demonstrating pattern radiation compliance by removing the measurements required by § 73.151 (a)(1)(ii) and (a)(1)(iii). The Report concludes that for simple directional antennas systems in the expanded band (those utilizing two towers), the Commission will require measured radials only in the directions for which the proposed allotment is short-spaced with another co-channel or adjacent channel allotment. This action will ensure that equivalent protection is provided to all expanded band facilities. The Commission further finds that in the isolated instances where a directional antenna system of more than two towers is used in the expanded band, full proof-of-performance requirements will apply.

111. Finally, a number of changes are made to part 2, Table of Frequency Allocations, § 2.106 of the rules, in addition to those described in the section on the Traveler's Information Service, to implement the AM band expansion and to modify the conditions for non-broadcast use of the band 1605–1705 kHz. These changes were proposed in the Notice and no comments were received on these subjects. In general, they reflect the Commission's decision to use that band for broadcast operation while continuing to permit operation of existing non-broadcast station, provided interference is not caused to broadcast stations.

112. In summary, in this Report and Order the Commission has taken a number of major steps to improve technical standards and thus to reduce the level interference in the existing band, to encourage certain existing licensees to move into the expanded portion of the AM band, and to consolidate existing broadcasting facilities in order to further reduce congestion and interference in the existing band. The Commission has taken these steps in order to slow or reverse the trends in this band towards rising congestion and interference and declining listening audiences. While aware that the actions of broadcasters and listeners will ultimately determine the future direction of AM radio, the Commission believes that the changes made in this Report will allow broadcasters to make changes that may greatly enhance their competitive position relative to other audio outlets.

Administrative Matters

113. Because the Commission is now issuing this Report and Order and closing this docket, it will also lift the freeze on AM applications on the effective date of this Report and Order. The Commission will begin accepting applications for modifications of existing AM stations and applications for new AM stations in the existing AM band. Such applications will be required to comply with the new technical standards that are adopted today. Applications currently on file that have been "cut-off" will not be required to amend. All others will be given sixty (60) days from the effective date of this Report and Order to file amendments to satisfy the requirements of the revised rules.

114. In Appendix D of the full Report, the Commission describes an example allotment plan for the expanded band that conforms to our new technical requirements. At a date to be specified in the future, the Commission will announce a filing window during which existing licensees will be allowed to file petitions to operate a station in the expanded band. Such petitioners will be required to comply with all relevant technical rules.

115. The Report and Order in MM Docket No. 89–46 adopted significant revisions to the rules and policies concerning interference reduction agreements, elimination of the "grandfathering" of deleted AM facilities, contingent applications, local service floor, and competing applications. The Report and Order in MM Docket No. 88–508 adopted changes to the Rules for calculating skywave

field strength utilizing a new, more accurate skywave propagation model that better depicts nighttime skywave service and interference on all channels. In the Report and Order in MM Docket No. 88–510, the Commission substituted new groundwave propagation curves for the current curves which allows better prediction of groundwave service and interference. In those actions, the Commission specifically stated that the effective date of the revisions would be established in this proceeding. Accordingly, the appropriate language is included in this Report and Order, and as stated in the **Federal Register** notices of all three decisions, the revised rules are included in the amended text of this action.

Final Regulatory Flexibility Analysis Statement

116. Pursuant to the Regulatory Flexibility Act of 1980, 5 U.S.C. 605, it is certified that this decision will have a significant impact on a substantial number of entities by enacting rules and policies intended to augment the increasingly declining role of AM radio in the competitive marketplace. The goal of this proceeding is to facilitate an overall improvement and revitalization of AM broadcast service. Thus, small businesses associated with AM radio will be effected beneficially, both short term and long term, by the action taken in this Report and Order.

117. It is again important to note that in reaching the decisions made in this Report and Order, the focus has indeed been on those measures that will attain the objective of AM service restoration, rather than on measures that might more directly benefit one or more segments of the industry itself. Therefore, those whose interests have not been fully realized by these actions should note that the Commission has attempted to balance their individual perspectives and needs with the ultimate goal of promoting the revitalization of the AM broadcast service as a whole. However, the overall view of this proceeding is that this revitalization of the AM band outweighs any particular broadcaster's individual perceived needs or desires. The complete text of this Final Regulatory Flexibility Analysis may be found in the full text of this Report and Order.

Ordering Clauses

118. Accordingly, *it is ordered* that pursuant to the authority contained in sections 4 and 303 of the Communications Act of 1934, as amended, 47 U.S.C. 154 and 303, 47 CFR parts 2, 73, and 90 are amended as set forth below, the effective date is contingent upon approval by OMB; a Notice announcing the specific effective date will be placed in the **Federal Register** when it becomes available.

119. *It is further ordered* that the freeze currently in effect on AM broadcast station applications is lifted, the effective date of its removal is contingent upon approval by OMB, and also upon OMB approval of revised FCC application Forms 301 and 302; a Notice announcing the specific effective date will be placed in the **Federal Register** when it becomes available.

120. *It is further ordered*, that the amendments to Part 73 of the Commission's Rules adopted April 12, 1990, in MM Dockets No. 88–508, 88–510, and 89–46, are effective contingent upon approval by OMB; a Notice will be placed in the **Federal Register** announcing the specific effective date when it becomes available.

121. *It is further ordered*, that the petition for rule making filed May 25, 1989 by Earl J. Weinreb is denied.

122. *It is further ordered* that MM Docket No. 87–267 is terminated.

List of Subjects

47 CFR parts 2 and 90

Radio.

47 CFR Part 73

Radio broadcasting.

Federal Communications Commission.

William F. Caton,

Acting Secretary.

Amendatory Text

Part 2 of title 47 of the CFR is amended as follows:

PART 2—[AMENDED]

1. The authority citation for part 2 continues to read as follows:

Authority: 47 U.S.C. 154 and 303

2. Section § 2.106 is amended by revising the 535–1605 kHz band, by adding US321, by revising footnotes US221, US238, US299, NG128 and 480 (International footnotes) and by removing footnote US237 as follows:

§ 2.106 Table of frequency allocations.

* * * * *

United States Table		FCC Use Designators	
Government	Non-government	Rule Part(s)	Special-Use Frequencies
Allocation kHz	Allocation kHz		
(4)	(5)	(6)	(7)
*	*	*	*
535–1705	535–1705 BROADCASTING	RADIO BROADCASTING (AM) (73). Alaska Fixed (80). Auxiliary Broadcasting (74). Private Land Mobile (90).	535–1705 kHz: Travelers Information.
480 US238, US299, US321,	480 US238, US299, US321, NG128.		
*	*	*	*

* * * * *

US221 In the 525–535 kHz band, the mobile service is limited to distribution of public service information from Travelers Information Stations operating on 530 kHz.

* * * * *

US238 The 1605–1705 kHz band is allocated to the radiolocation service on a secondary basis.

* * * * *

US299 The 1615–1705 kHz band in Alaska is also allocated to the maritime mobile services and the Alaska fixed service on a secondary basis to Region 2 broadcast operations.

* * * * *

US321 The 535–1705 kHz band is also allocated to the mobile service on a secondary basis for the distribution of public service information from Travelers Information Stations operating on 10 kHz spaced channels from 540 to 1700 kHz.

* * * * *

NG128 In the 535–1705 kHz band, AM broadcast licensees or permittees may use their AM carrier on a secondary basis to transmit signals intended for both broadcast and non-broadcast purposes. In the 88–108 MHz band, FM broadcast licensees or permittees are permitted to use subcarriers on a secondary basis to transmit signals

intended for both broadcast and non-broadcast purposes. In the 54–72, 76–88, 174–216 and 740–890 MHz bands, TV broadcast licensees or permittees are permitted to use subcarriers on a secondary basis for both broadcast and non-broadcast purposes.

* * * * *

480 In Region 2, the use of the 1605–1705 kHz band by stations of the broadcasting service is subject to the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).

In Region 2, in the 1625–1705 kHz band, the relationship between the broadcasting, fixed and mobile services is shown in No. 419. However, the examination of frequency assignments to stations of the fixed and mobile services in the 1625–1705 kHz band under No. 1241 shall take account of the allotments appearing in the plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).

* * * * *

Part 73 of title 47 of the CFR is amended as follows:

PART 73—[AMENDED]

3. The authority citation for part 73 continues to read as follows:

Authority: 47 U.S.C. 154 and 303.

4. Section 73.14 is amended by removing the Note following the definition of AM broadcast channel, by removing the definitions of Dominant station and Secondary AM station, by revising the definitions of AM broadcast band, AM broadcast channel, AM broadcast station, Main channel, Maximum percentage of modulation and Stereophonic channel, and by adding definitions of Model I and Model II facilities, to read as follows:

§ 73.14 AM broadcast definitions.

AM broadcast band. The band of frequencies extending from 535 to 1705 kHz.

AM broadcast channel. The band of frequencies occupied by the carrier and the upper and lower sidebands of an AM broadcast signal with the carrier frequency at the center. Channels are designated by their assigned carrier frequencies. The 117 carrier frequencies assigned to AM broadcast stations begin at 540 kHz and progress in 10 kHz steps to 1700 kHz. (See § 73.21 for the classification of AM broadcast channels).

AM broadcast station. A broadcast station licensed for the dissemination of radio communications intended to be received by the public and operated on a channel in the AM broadcast band.

* * * * *

Main channel. The band of audio frequencies from 50 to 10,000 Hz which amplitude modulates the carrier.

Maximum percentage of modulation. The greatest percentage of modulation that may be obtained by a transmitter without producing in its output, harmonics of the modulating frequency in excess of those permitted by these regulations. (See § 73.1570)

* * * * *

Model I facility. A station operating in the 1605–1705 kHz band featuring fulltime operation with stereo, competitive technical quality, 10 kW daytime power, 1 kW nighttime power, non-directional antenna (or a simple directional antenna system), and separated by 400–800 km from other co-channel stations.

Model II facility. A station operating in the 535–1605 kHz band featuring fulltime operation, competitive technical quality, wide area daytime coverage with nighttime coverage at least 15% of the daytime coverage.

* * * * *

Stereophonic channel. The band of audio frequencies from 50 to 10,000 Hz containing the stereophonic information which modulates the radio frequency carrier.

* * * * *

5. Section 73.21 is revised to read as follows:

§ 73.21 Classes of AM broadcast channels and stations.

(a) *Clear channel.* A clear channel is one on which stations are assigned to serve wide areas. These stations are protected from objectionable interference within their primary service areas and, depending on the class of station, their secondary service areas. Stations operating on these channels are classified as follows:

(1) *Class A station.* A Class A station is an unlimited time station that operates on a clear channel and is designed to render primary and secondary service over an extended area and at relatively long distances from its transmitter. Its primary service area is protected from objectionable interference from other stations on the same and adjacent channels, and its secondary service area is protected from interference from other stations on the same channel. (See § 73.182). The operating power shall not be less than 10 kW nor more than 50 kW. (Also see § 73.25(a)).

(2) *Class B station.* A Class B station is an unlimited time station which is designed to render service only over a primary service area. Class B stations are authorized to operate with a minimum power of 0.25 kW (or, if less than 0.25 kW, an equivalent RMS antenna field of at least 141 mV/m at 1 km) and a maximum power of 50 kW, or 10 kW for stations that are authorized to operate in the 1605–1705 kHz band.

(3) *Class D station.* A Class D station operates either daytime, limited time or unlimited time with nighttime power less than 0.25 kW and an equivalent RMS antenna field of less than 141 mV/m at one km. Class D stations shall operate with daytime powers not less than 0.25 kW nor more than 50 kW. Nighttime operations of Class D stations are not afforded protection and must protect all Class A and Class B operations during nighttime hours. New Class D stations that had not been previously licensed as Class B will not be authorized.

(b) *Regional Channel.* A regional channel is one on which Class B and Class D stations may operate and serve primarily a principal center of population and the rural area contiguous thereto.

Note: Until the North American Regional Broadcasting Agreement (NARBA) is terminated with respect to the Bahama Islands and the Dominican Republic, radiation toward those countries from a Class B station may not exceed the level that would be produced by an omnidirectional antenna with a transmitted power of 5 kW, or such lower level as will comply with NARBA requirements for protection of stations in the Bahama Islands and the Dominican Republic against objectionable interference.

(c) *Local channel.* A local channel is one on which stations operate unlimited time and serve primarily a community and the suburban and rural areas immediately contiguous thereto.

(1) *Class C station.* A Class C station is a station operating on a local channel and is designed to render service only over a primary service area that may be reduced as a consequence of interference in accordance with § 73.182. The power shall not be less than 0.25 kW, nor more than 1 kW. Class C stations that are licensed to operate with 0.1 kW may continue to do so.

§ 73.22 [Removed]

6. Section 73.22 is removed.

7. Section 73.3570 is redesignated as § 73.23 and revised to read as follows:

§ 73.23 AM broadcast station applications affected by international agreements.

(a) Except as provided in paragraph (b) of this section, no application for an AM station will be accepted for filing if authorization of the facilities requested would be inconsistent with international commitments of the United States under treaties and other international agreements, arrangements and understandings. (See list of such international instruments in

§ 73.1650(b)). Any such application that is inadvertently accepted for filing will be dismissed.

(b) AM applications that involve conflicts only with the North American Regional Broadcasting Agreement (NARBA), but that are in conformity with the remaining treaties and other international agreements listed in § 73.1650(b) and with the other requirements of this part 73, will be granted subject to such modifications as the FCC may subsequently find appropriate, taking international considerations into account.

(c) In the case of any application designated for hearing on issues other than those related to consistency with international relationships and as to which no final decision has been rendered, whenever action under this section becomes appropriate because of inconsistency with international relationships, the applicant involved shall, notwithstanding the provisions §§ 73.3522 and 73.3571, be permitted to amend its application to achieve consistency with such relationships. In such cases the provisions of § 73.3605(c) will apply.

(d) In some circumstances, special international considerations may require that the FCC, in acting on applications, follow procedures different from those established for general use. In such cases, affected applicants will be informed of the procedures to be followed.

8. In § 73.24, the Note following paragraph (b) is removed, paragraph (e) is revised, paragraph (h) is revised, paragraph (i) is removed, paragraph (j) is redesignated as (i) and is revised, and paragraph (k) is redesignated as (j), as follows:

§ 73.24 Broadcast facilities; showing required.

* * * * *

(e) That the technical equipment proposed, the location of the transmitter, and other technical phases of operation comply with the regulations governing the same, and the requirements of good engineering practice.

* * * * *

(h) That, in the case of an application for a Class B or Class D station on a clear channel, the proposed station would radiate, during two hours following local sunrise and two hours preceding local sunset, in any direction toward the 0.1 mV/m groundwave contour of a co-channel United States Class A station, no more than the maximum value permitted under the provisions of § 73.187.

(i) That, for all stations, the daytime 5 mV/m contour encompasses the entire principal community to be served. That, for stations in the 535–1605 kHz band, 80% of the principal community is encompassed by the nighttime 5 mV/m contour or the nighttime interference-free contour, whichever value is higher. That, for stations in the 1605–1705 kHz band, 50% of the principal community is encompassed by the 5 mV/m contour or the nighttime interference-free contour, whichever value is higher. That, Class D stations with nighttime authorizations need not demonstrate such coverage during nighttime operation.

* * * * *

9. In § 73.25, paragraphs (a)(1), (a)(2), (a)(2)(i), (a)(2)(ii) and (a)(2)(iii) are removed, and the heading, paragraphs (a), (b), and (c) and the Note following paragraph (b) are revised to read as follows:

§ 73.25 Clear channels; Class A, Class B and Class D stations.

* * * * *

(a) On each of the following channels, one Class A station may be assigned, operating with power of 50 kW: 640, 650, 660, 670, 700, 720, 750, 760, 770, 780, 820, 830, 840, 870, 880, 890, 1020, 1030, 1040, 1100, 1120, 1160, 1180, 1200, and 1210 kHz. In Alaska, these frequencies can be used by Class A stations subject to the conditions set forth in § 73.182(a)(1)(ii). On the channels listed in this paragraph, Class B and Class D stations may be assigned.

(b) To each of the following channels there may be assigned Class A, Class B and Class D stations: 680, 710, 810, 850, 940, 1000, 1060, 1070, 1080, 1090, 1110, 1130, 1140, 1170, 1190, 1500, 1510, 1520, 1530, 1540, 1550, and 1560 kHz.

Note: Until superseded by a new agreement, protection of the Bahama Islands shall be in accordance with NARBA. Accordingly, a Class A, Class B or Class D station on 1540 kHz shall restrict its signal to a value no greater than 5 μV/m groundwave or 25 μV/m-10% skywave at any point of land in the Bahama Islands, and such stations operating nighttime (i.e., sunset to sunrise at the location of the U.S. station) shall be located not less than 650 miles from the nearest point of land in the Bahama Islands.

(c) Class A, Class B and Class D stations may be assigned on 540, 690, 730, 740, 800, 860, 900, 990, 1010, 1050, 1220, 1540, 1570, and 1580 kHz.

10. Section 73.26 is revised to read as follows:

§ 73.26 Regional channels; Class B and Class D stations.

(a) The following frequencies are designated as regional channels and are assigned for use by Class B and Class D stations: 550, 560, 570, 580, 590, 600, 610, 620, 630, 790, 910, 920, 930, 950, 960, 970, 980, 1150, 1250, 1260, 1270, 1280, 1290, 1300, 1310, 1320, 1330, 1350, 1360, 1370, 1380, 1390, 1410, 1420, 1430, 1440, 1460, 1470, 1480, 1590, 1600, 1610, 1620, 1630, 1640, 1650, 1660, 1670, 1680, 1690, and 1700 kHz.

(b) Additionally, in Alaska, Hawaii, Puerto Rico, and the U.S. Virgin Islands the frequencies 1230, 1240, 1340, 1400, 1450, and 1490 kHz are designated as Regional channels, and are assigned for use by Class B stations. Stations formerly licensed to these channels in those locations as Class C stations are redesignated as Class B stations.

11. Section 73.27 is revised to read as follows:

§ 73.27 Local channels; Class C stations.

Within the conterminous 48 states, the following frequencies are designated as local channels, and are assigned for use by Class C stations: 1230, 1240, 1340, 1400, 1450, and 1490 kHz.

12. In § 73.28, paragraph (a) is removed, paragraph (b) is redesignated as paragraph (a) and revised, and paragraph (c) is redesignated as (b), as follows:

§ 73.28 Assignment of stations to channels.

(a) The Commission will not make an AM station assignment that does not conform with international requirements and restrictions on spectrum use that the United States has accepted as a signatory to treaties, conventions, and other international agreements. See § 73.1650 for a list of pertinent treaties, conventions and agreements, and § 73.23 for procedural provisions relating to compliance with them.

* * * * *

13. Section 73.29 is revised to read as follows:

§ 73.29 Class C stations on regional channels.

No license will be granted for the operation of a Class C station on a regional channel.

14. A new § 73.30 is added to read as follows:

§73.30 Petition for authorization of an allotment in the 1605–1705 kHz band.

(a) Any party interested in operating an AM broadcast station on one of the ten channels in the 1605–1705 kHz band must file a petition for the establishment of an allotment to its community of license. Each petition must include the following information:

(1) Name of community for which allotment is sought;

(2) Frequency and call letters of the petitioner's existing AM operation; and

(3) Statement as to whether or not AM stereo operation is proposed for the operation in the 1605–1705 kHz band.

(b) Petitions are to be filed during a filing period to be determined by the Commission. For each filing period, eligible stations will be allotted channels based on the following steps:

(1) Stations are ranked in descending order according to the calculated improvement factor.

(2) The station with the highest improvement factor is initially allotted the lowest available channel.

(3) Successively, each station with the next lowest improvement factor, is allotted an available channel taking into account the possible frequency and location combinations and relationship to previously selected allotments. If a channel is not available for the subject station, previous allotments are examined with respect to an alternate channel, the use of which would make a channel available for the subject station.

(4) When it has been determined that, in accordance with the above steps, no channel is available for the subject station, that station is no longer considered and the process continues to the station with the next lowest improvement factor.

(c) If awarded an allotment, a petitioner will have sixty (60) days from the date of public notice of selection to file an application for construction permit on FCC Form 301. (See §§73.24 and 73.37(e) for filing requirements). Unless instructed by the Commission to do otherwise, the application shall specify Model I facilities. (See § 73.14). Upon grant of the application and subsequent construction of the authorized facility, the applicant must file a license application on FCC Form 302.

Note 1: Until further notice by the Commission, the filing of these petitions is limited to licensees of existing AM stations (excluding Class C stations) operating in the 535–1605 kHz band. Selection among competing petitions will be based on interference reduction. Notwithstanding the exception in Note 4, within each operational category, the station demonstrating the highest value of improvement factor will be afforded the highest priority for an allotment, with the next priority assigned to the station with next lowest value, and so on, until available allotments are filled.

Note 2: The Commission will periodically evaluate the progress of the movement of stations from the 535–1605 kHz band to the 1605–1705 kHz band to determine whether the 1605–1705 kHz band should continue to be administered on an allotment basis or modified to an assignment method. If appropriate, the Commission will later develop further procedures for use of the 1605–1705 kHz band by existing station licensees and others.

Note 3: Existing fulltime stations are considered first for selection as described in Note 1. In the event that an allotment availability exists for which no fulltime station has filed a relevant petition, such allotment may be awarded to a licensed Class D station. If more than one Class D station applies for this migration opportunity, the following priorities will be used in the selection process: First priority—A Class D station located within the 0.5 mV/m-50% contour of a U.S. Class A station and licensed to serve a community of 100,000 or more, for which there exists no local fulltime aural service; second priority—Class D stations ranked in order of improvement factor, from highest to lowest, considering only those stations with improvement factors greater than zero.

Note 4: The preference for AM stereo in the expanded band will be administered as follows: When an allotment under consideration (candidate allotment) conflicts with one or more previously selected allotments (established allotments) and cannot be accommodated in the expanded band, the candidate allotment will be substituted for the previously established allotment provided that: The petitioner for the candidate allotment has made a written commitment to the use of AM stereo and the petitioner for the established allotment has not; the difference between the ranking factors associated with the candidate and established allotments does not exceed [illegible] of the ranking factor of the candidate allotment; the substitution will not require the displacement of more than one established allotment; and both the candidate allotment and the established allotment are within the same priority group.

15. Section 73.35 is added to read as follows:

§73.35 Calculation of improvement factors.

A petition for an allotment (See §73.30) in the 1605–1705 kHz band filed by an existing fulltime AM station licensed in the 535–1605 kHz band will be ranked according to the station's calculated improvement factor. (See §73.30). Improvement factors relate to both nighttime and daytime interference conditions and are based on two distinct considerations: (a) Service area lost by other stations due to interference caused by the subject station, and (b) service area of the subject station. These considerations are represented by a ratio. The ratio consists, where applicable, of two separate additive components, one for nighttime and one for daytime. For the nighttime component, to determine the numerator of the ratio (first consideration), calculate the RSS and associated service area of the stations (co- and adjacent channel) to which the subject station causes nighttime interference. Next, repeat the RSS and service area calculations excluding the subject station. The cumulative gain in the above service area is the numerator of the ratio. The denominator (second consideration) is the subject station's interference-free service area. For the daytime component, the composite amount of service lost by co-channel and adjacent channel stations, each taken individually, that are affected by the subject station, excluding the effects of other assignments during each study, will be used as the numerator of the daytime improvement factor. The denominator will consist of the actual daytime service area (0.5 mV/m contour) less any area lost to interference from other assignments. The value of this combined ratio will constitute the petitioner's improvement factor. Notwithstanding the requirements of §73.153, for uniform comparisons and simplicity, measurement data will not be used for determining improvement factors and FCC figure M-3 ground conductivity values are to be used exclusively in accordance with the pertinent [illegible] §73.183(c)(1).

[illegible] 73.37 is revised to read as follows:

§73.37 Applications for broadcast facilities, showing required.

(a) No application will be accepted for a new station if the proposed operation would involve overlap of signal strength contours with any other station as set forth below in this paragraph; and no application will be accepted for a change of the facilities of an existing station if the proposed change would involve such overlap where there is not already such overlap between the stations involved:

Frequency separation (kHz)	Contour of proposed station (classes B, C and D) (mV/m)	Contour of any other station (mV/m)
0	0.005	0.100 (Class A).
	0.025	0.500(Other classes).
	0.500	0.025 (All classes).
10	0.250	0.500(All classes).
	0.500	0.250 (All classes).
20	5	5 (All classes).
	5	5 (All classes).
30	25	25 (All classes).

(b) In determining overlap received, an application for a new Class C station with daytime power of 250 watts, or greater, shall be considered on the assumption that both the proposed operation and all existing Class C stations operate with 250 watts and utilize non-directional antennas.

(c) If otherwise consistent with the public interest, an application requesting an increase in the daytime power of an existing Class C station on a local channel from 250 watts to a maximum of 1kW, or from 100 watts to a maximum of 500 watts, may be granted notwithstanding overlap prohibited by paragraph (a) of this section. In the case of a 100 watt Class C station increasing daytime power, the provisions of this paragraph shall not be construed to permit an increase in power to more than 500 watts, if prohibited overlap would be involved, even if successive applications should be tendered.

(d) In addition to demonstrating compliance with paragraphs (a), and, as appropriate, (b), and (c) of this section, an application for a new AM broadcast station, or for a major change (see § 73.3571(a)(1)) in an authorized AM broadcast station, as a condition for its acceptance, shall make a satisfactory showing, if new or modified nighttime operation by a Class B station is proposed, that objectionable interference will not result to an authorized station, as determined pursuant to § 73.182(1).

(e) An application for an authorization in the 1605–1705 kHz band which has been selected through the petition process (See § 73.30) is not required to demonstrate compliance with paragraph (a), (b), (c), or (d) of this section. Instead, the applicant need only comply with the terms of the allotment authorization issued by the Commission in response to the earlier petition for establishment of a station in the 1605–1705 kHz band. Within the allotment authorization, the Commission will specify the assigned frequency and the applicable technical requirements.

(f) Stations on 1580, 1590 and 1600 kHz. In addition to the rules governing the authorization of facilities in the 535–1605 kHz band, stations on these frequencies seeking facilities modifications must protect assignments in the 1610–1700 kHz band. Such protection shall be afforded in a manner which considers the spacings that occur or exist between the subject station and a station within the range 1605–1700 kHz. The spacings are the same as those specified for stations in the frequency band 1610–1700 kHz or the current separation distance, whichever is greater. Modifications that would result in a spacing or spacings that fails to meet any of the separations must include a showing that appropriate adjustment has been made to the radiated signal which effectively results in a site-to-site radiation that is equivalent to the radiation of a station with standard Model I facilities (10 kW–D, 1 kW–N, non-DA, 90 degree antenna ht. & ground system) operating in compliance with all of the above separation distances. In those cases where that radiation equivalence value is already exceeded, a station may continue to maintain, but not increase beyond that level.

Note 1: In the case of applications for changes in the facilities of AM broadcast stations covered by this section, an application will be accepted even though overlap of field strength contours as mentioned in this section would occur with another station in an area where such overlap does not already exist, if:

(1) The total area of overlap with that station would not be increased;

(2) There would be no net increase in the area of overlap with any other station; and

(3) There would be created no area of overlap with any station with which overlap does not now exist.

Note 2: The provisions of this section concerning prohibited overlap of field strength contours will not apply where:

(1) The area of overlap lies entirely over sea water: or

(2) The only overlap involved would be that caused to a foreign station, in which case the provisions of the applicable international agreement, as identified in § 73.1650, will apply. When overlap would be received from a foreign station, the provisions of this section will apply, except where there would be overlap with a foreign station with a frequency separation of 20 kHz, in which case the provisions of the international agreement will apply in lieu of this section.

Note 3: In determining the number of "authorized" aural transmission facilities in a given community, applications for that community in hearing or otherwise having protected status under specified "cut-off" procedures shall be considered an existing stations. In the event that there are two or more mutually exclusive protected applications seeking authorization for the proposed community it will be assumed that only one is "authorized."

Note 4: A "transmission facility" for a community is a station licensed to the community. Such a station provides a "transmission service" for that community.

17. In § 73.53, paragraph (b)(1) is revised and a new Note is added after paragraph (c) to read as follows:

§ 73.53 Requirements for authorization of antenna monitors.

* * * * *

(b) * * *

(1) The monitor shall be designed to operate in the 535–1705 kHz band.

* * * * *

Note: In paragraph (b)(1) of this section, the requirement that monitors be capable of operation in the 535–1705 kHz band shall apply only to equipment manufactured after July 1, 1992. Use of a monitor in the 1605–1705 kHz bank which is not approved for such operation will be permitted pending the general availability of 535–1705 kHz band monitors if a manufacturer can demonstrate, in the interim, that is monitor performs in accordance with the standards in this section on these 10 channels.

18. In § 73.68, paragraph (d)(3) is revised to read as follows:

§ 73.68 Sampling systems for antenna monitors.

* * * * *

(d) * * *

(3) If that portion of the sampling system above the base of the towers is modified or components replaced, a partial proof of performance shall be executed in accordance with § 73.154 subsequent to these changes. The partial proof of performance shall be accompanied by common point impedance measurements made in accordance with § 73.54.

* * * * *

19. In § 73.69, paragraph (d)(4) is revised to read as follows:

§ 73.69 Antenna monitors.

* * * * *

(d) * * *

(4) If it cannot be established by the observations required in paragraph (d)(2) of this section that base current ratios and monitoring point values are within the tolerances or limits prescribed by the rules and the instrument of authorization, or if the substitution of the new antenna monitor for the old results in changes in these parameters, a partial proof of performance shall be executed and analyzed in accordance with § 73.154.

* * * * *

20. In § 73.72, paragraph (a) is revised to read as follows:

§ 73.72 Operating during the experimental period.

(a) An AM station may operate during the experimental period (the time between midnight and sunrise, local time) on its assigned frequency and with its authorized power for the routine testing and maintenance of its transmitting system, and for conducting experimentation under an experimental authorization, provided no interference is caused to other stations maintaining a regular operating schedule within such period.

* * * * *

21 § 73.88, a new Note is added after the introductory language to read as follows:

§ 73.88 Blanketing interference.

* * * * *

Note: For more detailed instructions concerning operational responsibilities of

licensees and permittees under this section, see § 73.318 (b), (c) and (d).

22. Section 73.99 is revised to read as follows:

§ 73.99 Presunrise service authorization (PSRA) and postsunset service authorization (PSSA).

(a) To provide maximum uniformity in early morning operation compatible with interference considerations, and to provide for additional service during early evening hours for Class D stations, provisions are made for presunrise service and postsunset service. The permissible power for presunrise or postsunset service authorizations shall not exceed 500 watts, or the authorized daytime or critical hours (whichever is less). Calculation of the permissible power shall consider only co-channel stations for interference protection purposes.

(b) Presunrise service authorizations (PSRA) permit:

(1) Class D stations operating on Mexican, Bahamian, and Canadian priority Class A clear channels to commence PSRA operation at 6 a.m. local time and to continue such operation until the sunrise times specified in their basic instruments of authorization.

(2) Class D stations situated outside 0.5 mV/m-50% skywave contours of co-channel U.S. Class A stations to commence PSRA operation at 6 a.m. local time and to continue such operation until sunrise times specified in their basic instruments of authorization.

(3) Class D stations located within co-channel 0.5 mV/m-50% skywave contours of U.S. Class A stations, to commence PSRA operation either at 6 a.m. local time, or at sunrise at the nearest Class A station located east of the Class D station (whichever is later), and to continue such operation until the sunrise times specified in their basic instruments of authorization.

(4) Class B and Class D stations on regional channels to commence PSRA operation at 6 a.m. local time and to continue such operation until local sunrise times specified in their basic instruments of authorization.

(c) Extended Daylight Saving Time Pre-Sunrise Authorizations:

(1) Between the first Sunday in April and the end of the month of April, Class D stations will be permitted to conduct pre-sunrise operation beginning at 6 a.m. local time with a maximum power of 500 watts (not to exceed the station's regular daytime or critical hours power), reduced as necessary to comply with the following requirements:

(i) Full protection is to be provided as specified in applicable international agreements.

(ii) Protection is to be provided to the 0.5 mV/m groundwave signals of co-channel U.S. Class A stations; protection to the 0.5 mV/m-50% skywave contours of these stations is not required.

(iii) In determining the protection to be provided, the effect of each interfering signal will be evaluated separately. The presence of interference from other stations will not reduce or eliminate the required protection.

(iv) Notwithstanding the requirements of paragraph (c)(1) (ii) and (iii) of this section, the stations will be permitted to operate with a minimum power of 10 watts unless a lower power is required by international agreement.

(2) The Commission will issue appropriate authorizations to Class D stations not previously eligible to operate during this period. Class D stations authorized to operate during this presunrise period may continue to operate under their current authorization.

(d) Postsunset service authorizations (PSSA) permit:

(1) Class D stations located on Mexican, Bahamian, and Canadian priority Class A clear channels to commence PSSA operation at sunset times specified in their basic instruments of authorization and to continue for two hours after such specified times.

(2) Class D stations situated outside 0.5 mV/m-50% skywave contours of co-channel U.S. Class A Stations to commence PSSA operations at sunset times specified in their basic instruments of authorization and to continue for two hours after such specified times.

(3) Class D stations located within co-channel 0.5 mV/m-50% skywave contours of U.S. Class A stations to commence PSSA operation at sunset times specified in their basic instruments of authorization and to continue such operation until two hours past such specified times, or until sunset at the nearest Class A station located west of the Class D station, whichever is earlier. Class D stations located west of the Class A station do not qualify for PSSA operation.

(4) Class D stations on regional channels to commence PSSA operation at sunset times specified on their basic instruments of authorization and to continue such operation until two hours past such specified times.

(e) Procedural Matters. (1) Applications for PSRA and PSSA operation are not required. Instead, the FCC will calculate the periods of such operation and the power to be used pursuant to the provisions of this section and the protection requirements contained in applicable international agreements. Licensees will be notified of permissible power and times of operation. Presunrise and Postsunset service authority permits operation on a secondary basis and does not confer license rights. No request for such authority need be filed. However, stations intending to operate PSRA or PSSA shall submit by letter, signed as specified in § 73.3513, the following information:

(i) Licensee name, station call letters and station location,

(ii) Indication as to whether PSRA operation, PSSA operation, or both, is intended by the station,

(iii) A description of the method whereby any necessary power reduction will be achieved.

(2) Upon submission of the required information, such operation may begin without further authority.

(f) Technical Criteria. Calculations to determine whether there is objectionable interference will be determined in accordance with the AM Broadcast Technical Standards, §§ 73.182 through 73.190, and applicable international agreements. Calculations will be performed using daytime antenna systems, or critical hours antenna systems when specified on the license. In performing calculations to determine assigned power and times for commencement of PSRA and PSSA operation, the following standards and criteria will be used:

(1) Class D stations operating in accordance with paragraphs (b)(1), (b)(2), (d)(1), and (d)(2) of this section are required to protect the nighttime 0.5 mV/m-50% skywave contours of co-channel Class A stations. Where a 0.5 mV/m-50% skywave signal from the Class A station is not produced, the 0.5 mV/m groundwave contour shall be protected.

(2) Class D stations are required to fully protect foreign Class B and Class C stations when operating PSRA and PSSA; Class D stations operating PSSA are required to fully protect U.S. Class B stations. For purposes of determining protection, the nighttime RSS limit will be used in the determination of maximum permissible power.

(3) Class D stations operating in accordance with paragraphs (d)(2) and (d)(3) of this section are required to restrict maximum 10% skywave radiation at any point on the daytime 0.1 mV/m groundwave contour of a co-channel Class A station to 25 μV/m. The

location of the 0.1 mV/m contour of the Class A station will be determined by use of Figure M3, *Estimated Ground Conductivity in the United States.* When the 0.1 mV/m contour extends beyond the national boundary, the international boundary shall be considered the 0.1 mV/m contour.

(4) Class B and Class D stations on regional channels operating PSRA and PSSA (Class D only) are required to provide full protection to co-channel foreign Class B and Class C stations.

(5) Class D stations on regional channels operating PSSA beyond 6 p.m. local time are required to fully protect U.s. Class B stations.

(6) The protection that Class D stations on regional channels are required to provide when operating PSSA until 6 p.m. local time is as follows.

(i) For the first half-hour of PSSA operation, protection will be calculated at sunset plus 30 minutes at the site of the Class D station;

(ii) For the second half-hour of PSSA operation, protection will be calculated at sunset plus one hour at the site of the Class D station;

(iii) For the second hour of PSSA operation, protection will be calculated at sunset plus two hours at the site of the Class D station;

(iv) Minimum powers during the period until 6 p.m. local time shall be permitted as follows:

Calculated power	Adjusted minimum power
From 1 to 45 watts	50 watts.
Above 45 to 70 watts	75 watts.
Above 70 to 100 watts	100 watts.

(7) For protection purposes, the nighttime RSS limit will be used in the determination of maximum permissible power.

(g) Calculations made under paragraph (d) of this section may not take outstanding PSRA or PSSA operations into account, nor will the grant of a PSRA or PSSA confer any degree of interference protection on the holder thereof.

(h) Operation under a PSRA or PSSA is not mandatory, and will not be included in determining compliance with the requirements of § 73.1740. To the extent actually undertaken, however, presunrise operation will be considered by the FCC in determining overall compliance with past programming representations and station policy concerning commercial matter.

(i) The PSRA or PSSA is secondary to the basic instrument of authorization with which it is to be associated. The PSRA or PSSA may be suspended, modified, or withdrawn by the FCC without prior notice or right to hearing, if necessary to resolve interference conflicts, to implement agreements with foreign governments, or in other circumstances warranting such action. Moreover, the PSRA or PSSA does not extend beyond the term of the basic authorization.

(j) The Commission will periodically recalculate maximum permissible power and times for commencing PSRA and PSSA for each Class D station operating in accordance with paragraph (c) of this section. The Commission will calculate the maximum power at which each individual station may conduct presunrise operations during extended daylight saving time and shall issue conforming authorizations. These original notifications and subsequent notifications should be associated with the station's authorization. Upon notification of new power and time of commencing operation, affected stations shall make necessary adjustments within 30 days.

(k) A PSRA and PSSA does not require compliance with §§ 73.45, 73.182 and 73.1560 where the operation might otherwise be considered as technically substandard. Further, the requirements of paragraphs (a)(5), (b)(2), (c)(2), and (d)(2) of § 73.1215 concerning the scale ranges of transmission system indicating instruments are waived for PSRA and PSSA operation except for the radio frequency ammeters used in determining antenna input power.

(l) A station having an antenna monitor incapable of functioning at the authorized PSRA and PSSA power when using a directional antenna shall take the monitor reading using an unmodulated carrier at the authorized daytime power immediately prior to commencing PSRA or PSSA operations. Special conditions as the FCC may deem appropriate may be included for PSRA or PSSA to insure operation of the transmitter and associated equipment in accordance with all phases of good engineering practice.

23. Section 73.150 is amended by revising paragraphs (a) introductory text, (b)(1) introductory text, (b)(2), (b)(3), (b)(5)(iv), (b)(5)(v), and (b)(6)(vii), by changing all references to miles in paragraph (b)(1)(i) to kilometers, and by revising equation 2 and the remaining formulas in paragraph (b)(1)(i) to read as follows:

§ 73.150 Directional antenna systems.

(a) For each station employing a directional antenna, all determinations of service provided and interference caused shall be based on the inverse distance fields of the standard radiation pattern for that station. (As applied to nighttime operation the term "standard radiation pattern" shall include the radiation pattern in the horizontal plane, and radiation patterns at angles above this plane.)

* * * * *

(b) * * *

(1) The standard radiation pattern for the proposed antenna in the horizontal plane, and where pertinent, tabulated values for the azimuthal radiation patterns for angles of elevation up to and including 60 degrees, with a separate section for each increment of 5 degrees.

(i) * * *

where:

$E(\phi,\theta)_{th}$ represents the theoretical inverse distance fields at one kilometer for the given azimuth and elevation.

* * * * *

The standard radiation pattern shall be constructed in accordance with the following mathematical expression:

$$E(\phi,\theta)_{std} = 1.05\sqrt{[E(\phi,\theta)_{th}]^2 + Q^2}$$

(Eq. 2)

where:

$E(\phi,\theta)_{std}$ represents the inverse distance fields at one kilometer which are produced by the directional antenna in the horizontal and vertical planes. $E(\phi,\theta)_{th}$ represents the theoretical inverse distance fields at one kilometer as computed in accordance with Eq. 1, above.

Q is the greater of the following two quantities: $0.025g(\theta)\ E_{rss}$ or $10.0g(\theta)\sqrt{P_{kW}}$

where:

$g(\theta)$ is the vertical plane distribution factor, $f(\theta)$, for the shortest element in the array (see Eq. 2, above; also see § 73.190, Figure 5). If the shortest element has an electrical height in excess of 0.5 wavelength, $g(\theta)$ shall be computed as follows:

$$g(\theta) = \frac{\sqrt{|f(\theta)|^2 + 0.0625}}{1.030776}$$

E_{rss} is the root sum square of the amplitudes of the inverse fields of the elements of the array in the horizontal plane, as used in the expression for $E(\phi,\theta)_{th}$ (see Eq. 1 above), and is computed as follows:

$$E_{rss} = k\sqrt{\sum_{i=1}^{n} F_i^2}$$

P_{kw} is the nominal station power expressed in kilowatts, see § 73.14. If the nominal power is less than one kilowatt, P_{kw}f five degrees, beginning with zero degrees representing true north, and, shall be plotted to the largest scale possible on unglazed letter-size paper (main engraving approximately 7" × 10") using only scale divisions and subdivisions of 1,2,2.5, or 5 times 10^{nth}. The horizontal plane pattern shall be plotted on polar coordinate paper, with the zero degree point corresponding to true north. Patterns for elevation angles above the horizontal plane may be plotted in polar or rectangular coordinates, with the pattern for each angle of elevation on a separate page. Rectangular plots shall begin and end at true north, with all azimuths labelled in increments of not less than 20 degrees. If a rectangular plot is used, the ordinate showing the scale for radiation may be logarithmic. Such patterns for elevation angles above the horizontal plane need be submitted only upon specific request by Commission staff. Minor lobe and null detail occurring between successive patterns for specific angles of elevation need not be submitted. Values of field strength on any pattern less than ten percent of the maximum field strength plotted on that pattern shall be shown on an enlarged scale. Rectangular plots with a logarithmic ordinate need not utilize an expanded scale unless necessary to show clearly the minor lobe and null detail.

(3) The effective (RMS) field strength in horizontal plane of $E(\phi,\theta)_{std}$, $E(\phi,\theta)_{th}$ and the root-sum-square (RSS) value of the inverse distance fields of the array elements at 1 kilometer, derived from the equation for $E(\phi,\theta)_{th}$. These values shall be tabulated on the page on which the horizontal plane pattern is plotted, which shall be specifically labelled as the Standard Harizontal Plane Pattern.

(4) * * *

(5) * * *

(iv) Where waiver of the content of this section is requested or upon request of the Commission staff, all assumptions made and the basis therefor, particularly with respect to the electrical height of the elements, current distribution along elements, efficiency of each element, and ground conductivity.

(v) Where waiver of the content of this section is requested, or upon request of the Commission staff, those formulas used for computing $E(\phi,\theta)_{th}$ and $E(\phi,\theta)_{std}$. Complete tabulation of final computed data used in plotting patterns, including data for the determination of the RMS value of the pattern, and the RSS field of the array.

(6) * * *

(vii) Additional requirements relating to modified standard patterns appear in § 73.152(c)(3) and (c)(4).

* * * * *

24. Section 73.151 is amended by adding a new paragraph (b) to read as follows:

§ 73.151 Field strength measurements to establish performance of directional antennas.

* * * * *

(b) For stations authorized to operate with simple directional antenna systems (*e.g.*, two towers) in the 1605–1705 kHz band, the measurements to support pattern RMS compliance referred to in paragraphs (a)(1)(ii) and (a)(1)(iii) of this section are not required. In such cases, measured radials are required only in the direction of short-spaced allotments, or in directions specifically identified by the Commission.

25. Section 73.152 is amended by adding new paragraphs (c)(2)(iv).

§ 73.152 Modification of directional antenna data.

* * * * *

(c) * * *

(2) * * *

(iv) Where the measured inverse distance field exceeds the value permitted by the standard pattern, and augmentation is allowable under the terms of this section, the requested amount of augmentation shall be centered upon the azimuth of the radial upon which the excessive radiation was measured and shall not exceed the following:

(A) The actual measured inverse distance field value, where the radial does not involve a required monitoring point.

(B) 120% of the actual measured inverse field value, where the radial has a monitoring point required by the instrument of authorization.

Whereas some pattern smoothing can be accommodated, the extent of the requested span(s) shall be minimized and in no case shall a requested augmentation span extend to a radial azimuth for which the analyzed measurement data does not show a need for augmentation.

* * * * *

26. Section 73.153 is amended by revising the last sentence in the paragraph to read as follows:

§ 73.153 Field strength measurements in support of applications or evidence at hearings.

* * * The antenna resistance measurements required by § 73.186 need not be taken or submitted.

27. Section 73.182 is revised to read as follows:

§ 73.182 Engineering standards of allocation.

(a) Sections 73.21 to 73.37, inclusive, govern allocation of facilities in the AM broadcast band 535–1705 kHz. § 73.21 establishes three classes of channels in this band, namely, clear, regional and local. The classes and power of AM broadcast stations which will be assigned to the various channels are set forth in § 73.21. The classifications of the AM broadcast stations are as follows:

(1) Class A stations operate on clear channels with powers no less than 10kW nor greater than 50 kW. These stations are designed to render primary and secondary service over an extended area, with their primary services areas protected from objectionable interference from other stations on the same and adjacent channels. Their secondary service areas are protected from objectionable interference from co-channel stations. For purposes of protection, Class A stations may be divided into two groups, those located in any of the contiguous 48 States and those located in Alaska in accordance with § 73.25.

(i) The mainland U.S. Class A stations are those assigned to the channels allocated by § 73.25. The power of these stations shall be 50 kW. The Class A stations in this group are afforded protection as follows:

(A) Daytime. To the 0.1 mV/m groundwave contour from stations on the same channel, and to the 0.5 mV/m groundwave contour from stations on adjacent channels.

(B) Nighttime. To the 0.5 mV/m-50% skywave contour from stations on the same channels.

(ii) Class A stations in Alaska operate on the channels allocated by § 73.25 with a minimum power of 10 kW, a maximum power of 50 kW, and an antenna efficiency of 282 mV/m/kW at 1 kilometer. Stations operating on these channels in Alaska which have not been designated as Class A stations in response to licensee request will continue to be considered as Class B stations. During daytime hours a Class A station in Alaska is protected to the 100 μV/m groundwave contour from co-channel stations. During nighttime hours, a Class A station in Alaska is

protected to the 100 μV/m-50 percent skywave contour from co-channel stations. The 0.5 mV/m groundwave contour is protected both daytime and nighttime from stations on adjacent channels.

Note: In the Report and Order in MM Docket No. 83-807, the Commission designated 15 stations operating on U.S. clear channels as Alaskan Class A stations. Eleven of these stations already have Alaskan Class A facilities and are to be protected accordingly. Permanent designation of the other four stations as Alaskan Class A is conditioned on their constructing minimum Alaskan Class A facilities no later than December 31, 1989. Until that date or until such facilities are obtained, these four stations shall be temporarily designated as Alaskan Class A stations, and calculations involving these stations should be based on existing facilities but with an assumed power of 10 kW. Thereafter, these stations are to be protected based on their actual Alaskan Class A facilities. If any of these stations does not obtain Alaskan Class A facilities in the period specified, it is to be protected as a Class B station based on its actual facilities. These four stations may increase power to 10 kW without regard to the impact on co-channel Class B stations. However, power increases by these stations above 10 kW (or by existing Alaskan Class A stations beyond their current power level) are subject to applicable protection requirements for co-channel Class B stations. Other stations not on the original list but which meet applicable requirements may obtain Alaskan Class A status by seeking such designation from the Commission. If a power increase or other change in facilities by a station not on the original list is required to obtain minimum Alaskan Class A facilities, any such application shall meet the interference protection requirements applicable to an Alaskan Class A proposal on the channel.

(2) Class B stations are stations which operate on clear and regional channels with powers not less than 0.25 kW nor more than 50 kW. These stations render primary service only, the area of which depends on their geographical location, power, and frequency. It is recommended that Class B stations be located so that the interference received from other stations will not limit the service area to a groundwave contour value greater than 2.0 mV/m nighttime and to the 0.5 mV/m groundwave contour daytime, which are the values for the mutual protection between this class of stations and other stations of the same class.

Note: See §§ 73.21(b)(1) and 73.26(b) concerning power restrictions and classifications relative to Class B, Class C, and Class D stations in Alaska, Hawaii, Puerto Rico and the U.S. Virgin Islands. Stations in the above-named places that are reclassified from Class C to Class B stations under § 73.26(b) shall not be authorized to increase power to levels that would increase the nighttime interference-free limit of co-channel Class C stations in the conterminous United States.

(3) Class C stations operate on local channels, normally rendering primary service to a community and the suburban or rural areas immediately contiguous thereto, with powers not less than 0.25 kW, nor more than 1 kW, except as provided in § 73.21(c)(1). Such stations are normally protected to the daytime 0.5 mV/m contour. On local channels the separation required for the daytime protection shall also determine the nighttime separation. Where directional antennas are employed daytime by Class C stations operating with more than 0.25 kW power, the separations required shall in no case be less than those necessary to afford protection, assuming nondirectional operation with 0.25 kW. In no case will 0.25 kW or greater nighttime power be authorized to a station unable to operate nondirectionally with a power of 0.25 kW during daytime hours. The actual nighttime limitation will be calculated. For nighttime protection purposes, Class C stations in the 48 contiguous United States may assume that stations in Alaska, Hawaii, Puerto Rico, and the U.S. Virgin Islands operating on 1230, 1240, 1340, 1400, 1450, and 1490 kHz are Class C stations.

(4) Class D stations operate on clear and regional channels with daytime powers of not less than 0.25 kW (or equivalent RMS field of 141 mV/m at one kilometer if less than 0.25 kW) and not more than 50 kW. Class D stations that have previously received nighttime authority operate with powers of less than 0.25 kW (or equivalent RMS fields of less than 141 mV/m at one kilometer) are not required to provide nighttime coverage in accordance with § 73.24(j) and are not protected from interference during nighttime hours. Such nighttime authority is permitted on the basis of full nighttime protection being afforded to all Class A and Class B stations.

(b) When a station is already limited by interference from other stations to a contour value greater than that normally protected for its class, the individual received limits shall be the established standard for such station with respect to interference from each other station.

(c) The four classes of AM broadcast stations have in general three types of service areas, i.e., primary, secondary and intermittent. (See § 73.14 for the definitions of primary, secondary, and intermittent service areas.) Class A stations render service to all three areas. Class B stations render service to a primary area but the secondary and intermittent service areas may be materially limited or destroyed due to interference from other stations, depending on the station assignments involved. Class C and Class D stations usually have only primary service areas. Interference from other stations may limit intermittent service areas and generally prevents any secondary service to those stations which operate at night. Complete intermittent service may still be obtained in many cases depending on the station assignments involved.

(d) The groundwave signal strength required to render primary service is 2 mV/m for communities with populations of 2,500 or more and 0.5 mV/m for communities with populations of less than 2,500. See § 73.184 for curves showing distance to various groundwave field strength contours for different frequencies and ground conductivities, and also see § 73.183, "Groundwave signals."

(e) A Class C station may be authorized to operate with a directional antenna during daytime hours providing the power is at least 0.25 kW. In computing the degrees of protection which such antenna will afford, the radiation produced by the directional antenna system will be assumed to be no less, in any direction, than that which would result from non-directional operation using a single element of the directional array, with 0.25 kW.

(f) All classes of broadcast stations have primary service areas subject to limitation by fading and noise, and interference from other stations to the contours set out for each class of station.

(g) Secondary service is provided during nighttime hours in areas where the skywave field strength, 50% or more of the time, is 0.5 mV/m or greater (0.1 mV/m in Alaska). Satisfactory secondary service to cities is not considered possible unless the field strength of the skywave signal approaches or exceeds the value of the groundwave field strength that is required for primary service. Secondary service is subject to some interference and extensive fading whereas the primary service area of a station is subject to no objectionable interference or fading. Only Class A stations are assigned on the basis of rendering secondary service.

Note: Standards have not been established for objectionable fading because of the relationship to receiver characteristics. Selective fading causes audio distortion and signal strength reduction below the noise level, objectionable characteristics inherent in many modern receivers. The AVC circuits in the better designed receivers generally maintain the audio output at a sufficiently

constant level to permit satisfactory reception during most fading conditions.

(h) Intermittent service is rendered by the groundwave and begins at the outer boundary of the primary service area and extends to a distance where the signal strength decreases to a value that is too low to provide any service. This may be as low as a few $\mu V/m$ in certain areas and as high as several millivolts per meter in other areas of high noise level, interference from other stations, or objectionable fading at night. The intermittent service area may vary widely from day to night and generally varies over shorter intervals of time. Only Class A stations are protected from interference from other stations to the intermittent service area.

(i) Broadcast stations are licensed to operate unlimited time, limited time, daytime, share time, and specified hours. (See §§ 73.1710, 73.1725, 73.1720, 73.1715, and 73.1730.) Applications for new stations shall specify unlimited time operation only.

(j) Section 73.24 sets out the general requirements for modifying the facilities of a licensed station and for establishing a new station. Sections 73.24(b) and 73.37 include interference related provisions that be considered in connection with an application to modify the facilities of an existing station or to establish a new station. Section 73.30 describes the procedural steps required to receive an authorization to operate in the 1605–1705 kHz band.

(k) Objectionable nighttime interference from a broadcast station occurs when, at a specified field strength contour with respect to the desired station, the field strength of an undesired station (co-channel or first adjacent channel, after application of proper protection ratio) exceeds for 10% or more of the time the values set forth in these standards. The value derived from the root-sum-square of all interference contributions represents the extent of a station's interference-free coverage.

(l) With respect to the root-sum-square (RSS) values of interfering field strengths referred to in this section, calculation of nighttime interference-free service is accomplished by considering the signals on the three channels of concern (co- and first adjacencies) in order of decreasing magnitude, adding the squares of the values and extracting the square root of the sum, excluding those signals which are less than 50% of the RSS values of the higher signals already included.

(2) With respect to the root-sum-square values of interfering field strengths referred to in this section, calculation of nighttime interference for non-coverage purposes is accomplished by considering the signals on the three channels of concern (co- and first adjacencies) in order of decreasing magnitude, adding the squares of the values and extracting the square root of the sum, excluding those signals which are less than 25% of the RSS values of the higher signals already included.

(3) With respect to the root-sum-square values of interfering field strengths referred to in this section, calculation is accomplished by considering the signals on the three channels of concern (co- and first adjacencies) in order of decreasing magnitude, adding the squares of the values and extracting the square root of the sum. The 0% exclusion method applies only to the determination of an improvement factor value for evaluating a station's eligibility for migration to the band 1605–1705 kHz.

(4) The RSS value of the nighttime interference-free contour will not be considered to be increased when a new interfering signal is added which is less than 50% of the RSS value of the interference from existing stations, and which at the same time is not greater than the smallest signal included in the RSS value of interference from existing stations.

(5) It is recognized that application of the above "50% exclusion" method (or any exclusion method using a per cent value greater than zero) of calculating the RSS interference may result in some cases in anomalies wherein the addition of a new interfering signal or the increase in value of an existing interfering signal will cause the exclusion of a previously included signal and may cause a decrease in the calculated RSS value of interference. In order to provide the Commission with more realistic information regarding gains and losses in service (as a basis for determination of the relative merits of a proposed operation) the following alternate method for calculating the proposed RSS values of interference will be employed wherever applicable.

(6) In the cases where it is proposed to add a new interfering signal which is not less than 50% (or 25%, depending on which study is being performed) of the RSS value of interference from existing stations or which is greater that the smallest signal already included to obtain this RSS value, the RSS limitation after addition of the new signal shall be calculated without excluding any signal previously included. Similarly, in cases where it is proposed to increase the value of one of the existing interfering signals which has been included in the RSS value, the RSS limitation after the increase shall be calculated without excluding the interference from any source previously included.

(7) If the new or increased signal proposed in such cases is ultimately authorized, the RSS values of interference to other stations affected will thereafter be calculated by the "50% exclusion" (or 25% exclusion, depending on which study is being performed) method without regard to this alternate method of calculation.

(8) Examples of RSS interference calculations:

(i) Existing interferences:

Station No. 1—1.00 mV/m.
Station No. 2—0.60 mV/m.
Station No. 3—0.59 mV/m.
Station No. 4—0.58 mV/m.

The RSS value from Nos. 1, 2 and 3 is 1.31 mV/m; therefore interference from No. 4 is excluded for it is less than 50% of 1.31 mV/m.

(ii) Station A receives interferences from:

Station No. 1—1.00 mV/m.
Station No. 2—0.60 mV/m.
Station No. 3—0.59 mV/m.

It is proposed to add a new limitation, 0.68 mV/m. This is more than 50% of 1.31 mV/m, the RSS value from Nos. 1, 2 and 3. The RSS value of Station No. 1 and of the proposed station would be 1.21 m/Vm which is more than twice as large as the limitation from Station No. 2 or No. 3. However, under the above provision the new signal and the three existing interferences are nevertheless calculated for purposes of comparative studies, resulting in an RSS value of 1.47 mV/m. However, if the proposed station is ultimately authorized, only No. 1 and the new signal are included in all subsequent calculations for the reason that Nos. 2 and 3 are less than 50% of 1.21 mV/m, the RSS value of the new signal and No. 1.

(iii) Station A receives interferences from:

Station No. 1—1.00 mV/m.
Station No. 2—0.60 mV/m.
Station No. 3—0.59 mV/m.

No. 1 proposes to increase the limitation it imposes on Station A to 1.21 mV/m. Although the limitations from stations Nos. 2 and 3 are less than 50% of the 1.21 mV/m limitation, under the above provision they are nevertheless included for comparative studies, and the RSS limitation is calculated to be 1.47 mV/m. However, if the increase proposed by Station No. 1 is authorized, the RSS value then calculated is 1.21 mV/m because Stations Nos. 2 and 3 are excluded in view of the fact that the limitations they impose are less than 50% of 1.21 mV/m.

Note: The principles demonstrated in the previous examples for the calculation of the 50% exclusion method also apply to calculations using the 25% exclusion method after appropriate adjustment.

(l) Objectionable nighttime interference from a station shall be considered to exist to a station when, at the field strength contour specified in paragraph (q) of this section with respect to the class to which the station belongs, the field strength of an interfering station operating on the same channel or on a first adjacent channel after signal adjustment using the proper protection ratio, exceeds for 10% or more of the time the value of the permissible interfering signal set forth opposite such class in paragraph (q) of this section.

(m) For the purpose of estimating the coverage and the interfering effects of stations in the absence of field strength measurements, use shall be made of Figure 8 of § 73.190, which describes the estimated effective field (for 1 kW power input) of simple vertical omnidirectional antennas of various heights with ground systems having at least 120 quarter-wavelength radials. Certain approximations, based on the curve or other appropriate theory, may be made when other than such antennas and ground systems are employed, but in any event the effective field to be employed shall not be less than the following:

Class of station	Effective field (at 1 km)
All Class A (except Alaskan)	362 mV/m.
Class A (Alaskan), B and D	282 mV/m.
Class C	241 mV/m.

Note (1): When a directional antenna is employed, the radiated signal of a broadcasting station will vary in strength in different directions, possibly being greater than the above values in certain directions and less in other directions depending upon the design and adjustment of the directional antenna system. To determine the interference in any direction, the measured or calculated radiated field (unattenuated field strength at 1 kilometer from the array) must be used in conjunction with the appropriate propagation curves. (See § 73.185 for further discussion and solution of a typical directional antenna case.)

Note (2): For Class B stations in Alaska, Hawaii, Puerto Rico and the U.S. Virgin Islands, 241 mV/m shall be used.

(n) The existence or absence of objectionable groundwave interference from stations on the same or adjacent channels shall be determined by actual measurements made in accordance with the method described in § 73.186, or in the absence of such measurements, by reference to the propagation curves of § 73.184. The existence or absence of objectionable interference due to skywave propagation shall be determined by reference to Formula 2 in § 73.190.

(o) Computation of Skywave Field Strength Values:

(1) Fifty Percent Skywave Field Strength Values (Clear Channel). In computing the fifty percent skywave field strength values of a Class A clear channel station, use shall be made of Formula 1 of § 73.190, entitled "Skywave Field Strength" for 50 percent of the time.

(2) Ten Percent Skywave Field Strength Values. In computing the 10% skywave field strength for stations on a single signal or an RSS basis, Formula 2 in § 73.190 shall be used.

(3) Determination of Angles of Departure. In calculating skywave field strength for stations on all channels, the pertinent vertical angle shall be determined by use of the formula in § 73.190(d).

(p) The distance to any specified groundwave field strength contour for any frequency may be determined from the appropriate curves in § 73.184 entitled "Ground Wave Field Strength vs. Distance."

(q) Normally protected service contours and permissible interference signals for broadcast stations are as follows (for Class A stations, see also paragraph (a) of this section):

Class of station	Class of channel used	Signal strength contour of area protected from objectionable interference [1] (μV/m)		Permissible interfering signal (μV/m)	
		Day [2]	Night	Day [3]	Night [3]
A	Clear	SC 100	SC 500 50% SW AC 500 GW	SC 5 AC 250	SC 25 Ac 250
A (Alaskan)	do	SC 100 AC 500	SC 100 50% SW AC 500 GW	SC5 AC 250	SC 5 AC 250
B	Clear	500	2000 [2]	25	25
C	Regional Local	500	Not persc.[4]	AC 250 SC 25	250 Not presc.
D	Clear Regional	500	Not presc.	SC 25 AC 250	Not presc.

[1] When a station is already limited by interference from other stations to a contour of higher value than that normally protected for its class, this higher value contour shall be the established protection standard for such station. Changes proposed by Class A and B stations shall be required to comply with the following restrictions. Those interferers that contribute to another station's RSS using the 50% exclusion method are required to reduce their contribution to that RSS by 10%. Those lesser interferers that contribute to a station's RSS using the 25% exclusion method but do not contribute to that station's RSS using the 50% exclusion method may make changes not to exceed their present contribution. Interferers not included in a station's RSS using the 25% exclusion method are permitted to increase radiation as long as the 25% exclusion threshold is not equalled or exceeded. In no case will a reduction be required that would result in a contributing value that is below the pertinent value specified in the table. This note does not apply to Class C stations; or to the protection of Class A stations which are normally protected on a single signal, non-RSS basis.

[2] Groundwave.

[3] Skywave field strength for 10 percent or more of the time.

[4] During nighttime hours, Class C stations in the contiguous 48 States may treat all Class B stations assigned to 1230, 1240, 1340, 1400, 1450 and 1490 kHz in Alaska, Hawaii, Puerto Rico and the U.S. Virgin Islands as if they were Class C stations.

Note: SC=Same channel; AC=Adjacent channel; SW=Skywave; GW=Groundwave.

(r) The following table of logarithmic expressions is to be used as required for determining the minimum permissible ratio of the field strength of a desired to an undesired signal. This table shall be used in conjunction with the protected contours specified in paragraph (q) of this section.

Frequency separation of desired to undesired signals (kHz)	Desired Groundwave to:		Desired 50% Skywave to Undesired 10% Skywave (dB)
	Undesired groundwave (dB)	Undesired 10% Skywave (dB)	
0	26	26	26
10	6	6	not presc.

(s) Two stations, one with a frequency twice of the other, should not be assigned in the same groundwave service area unless special precautions are taken to avoid interference from the second harmonic of the station operating on the lower frequency. Additionally, in selecting a frequency, consideration should be given to the fact that occasionally the frequency assignment of two stations in the same area may bear such a relation to the intermediate frequency of some broadcast receivers as to cause "image" interference, However, since this can usually be rectified by readjustment of the intermediate frequency of such receivers, the Commission, in general, will not take this kind of interference into consideration when authorizing stations.

(t) The groundwave service of two stations operating with synchronized carriers and broadcasting identical programs will be subject to some distortion in areas where the signals from the two stations are of comparable strength. For the purpose of estimating coverage of such stations, areas in which the signal ratio is between 1:2 and 2:1 will not be considered as receiving satisfactory service.

Note: Two stations are considered to be operated synchronously when the carriers are maintained within 0.2 Hz of each other and they transmit identical program s.

28. Section 73.183 is amended by removing paragraph (b) and the Note; adding a note after paragraph (a); redesignating paragraphs (c) through (f) as (b) through (e); and revising newly redesignated paragraphs (c) and (e) to read as follows:

§ 73.183 Groundwave signals.

(a) * * *

Note: Groundwave field strength measurements will not be accepted or considered for the purpose of establishing that interference to a station in a foreign country other than Canada, or that the field strength at the border thereof, would be less than indicated by the use of the ground conductivity maps and engineering standards contained in this part and applicable international agreements. Satisfactory groundwave measurements offered for the purpose of demonstrating values of conductivity other than those shown by Figure M3 in problems involving protection of Canadian stations will be considered only if, after review thereof, the appropriate agency of the Canadian government notifies the Commission that they are acceptable for such purpose.

* * * * *

(c) Example of determining interference by the graphs in § 73.184:

It is desired to determine whether objectionable interference exists between a proposed 5 kW Class B station on 990 kWz and an existing 1 kW Class B station on first adjacent channel, 1000 kHz. The distance between the two stations is 260 kilometers and both stations operate nondirectionally with antenna systems that produce a horizontal effective field of 282 in V/m at one kilometer. (See § 73.185 regarding of use of directional antennas.) The ground conductivity at the site of each station and along the intervening terrain is 6 mS/m. The protection to Class B stations during daytime is to the 500 μV/m (0.5 Vm) contour using a 6 dB protection factor. The distance to the 500 μV/m groundwave contour of the 1 kW station is determined by the use of the appropriate curve in § 73.184. Since the curve is plotted for 100 mV/m at a 1 kilometer, to find the distance of the 0.5 mV/m contour of the 1 kw station, it is necessary to determine the distance to the 0.1773 m/Vm contour.

(100×0.5/282-0.1773)

Using the 6 mS/m curve, the estimated radius of the 0.5 mV/m contour is 62.5 kilometers. Subtracting this distance from the distance between the two stations leaves 197.5 kilometers. Using the same propagation curve, the signal from the 5 kW station at this distance is seen to be 0.059 mV/m. Since a protection ratio of 6 dB, desired to undesired signal, applies to stations separated by 10 kHz, the undesired signal could have had a value of up to 0.25 mV/m without causing objectionable interference. For co-channel studies, a desired to undesired signal ratio of no less than 20:1 (26 dB) is required to avoid causing objectionable interference.

* * * * *

(e) Example of the use of the equivalent distance method;

It is desired to determine the distance to the 0.5 mV/m and 0.025 mV/m contours of a station on a frequency of 1000 kHz with an inverse distance field of 100 mV/m at one kilometer being radiated over a path having a conductivity of 10 mS/m for a distance of 20 kilometers, 5 mS/m for the next 30 kilometers and 15 mSm/m thereafter. Using the appropriate curve in § 73.184, Graph 12, at a distance of 20 kilometers on the curve for 10 mS/m, the field strength is found to be 2.84 mV/m. On the 5mS/m curve, the equivalent distance to this field strength is 14.92 kilometers, which is 5.08 (20−14.92 kilometers nearer to the transmitter. Continuing on the propagation curve, the distance to a field strength of 0.5 mV/m is found to be 36.11 kilomteres.

The actual length of the path travelled, however, is 41.19 (36.11+5.08) kilometers. Continuing on this propagation curve to the conductivity change at 44.92 (50.00−5.08) kilometers, the field strength is found to be 0.304 mV/m. On the 15 mS/m propagation curve, the equivalent distance to this field strength is 82.94 kilometers, which changes the effective path length by 38.02 (82.94−44.92) kilometers. Continuing on this propagation curve, the distance to a field strength of 0.025 mV/m is seen to be 224.4 kilometers. The actual length of the path travelled, however, is 191.46 (224.4+5.08−38.02) kilometers.

29. Section 73.184 is amended by revising paragraph (a) and the note following paragraph (b), removing paragraph (c), and revising and redesignating paragraphs (d), (e), and (f) as (c), (d), and (e), to read as follows:

§ 73.184 Groundwave field strength charts.

(a) Graphs 1 to 20 show, for each of 20 frequencies, the computed values of groundwave field strength as a function of groundwave conductivity and distance from the source of radiation. The groundwave field strength is considered to be that part of the vertical component of the electric field which has not been reflected from the ionosphere nor from the troposphere. These 20 families of curves are plotted on log-log graph paper and each is to be used for the range of frequencies shown thereon. Computations are based on a dielectric constant of the ground (referred to air as unity) equal to 15 for land and 80 for sea water and for the ground conductivities (expressed in mS/m) given on the curves. The curves show the variation of the groundwave field strength with distance to be expected for transmission from a vertical antenna at the surface of a uniformly conducting spherical earth with the groundwave constants shown on the curves. The curves are for an antenna power of such efficiency and current distribution that the inverse distance (unattenuated) field is 100 mV/m at 1 kilometer. The curves are valid for distances that are large compared to the dimensions of the antenna for other than short vertical antennas.

(b)* * *

Note: The computed values of field strength versus distance used to plot Graphs 1 to 20 are available in tabular form. For information on obtaining copies of these tabulations call or write the Consumer Affairs Office, Federal Communications Commission, Washington, DC 20554, (202) 632-7000.

(c) Provided the value of the dielectric constant is near 15, the ground conductivity curves of Graphs 1 to 20 may be compared with actual field strength measurement data to determine the appropriate values of the ground conductivity and the inverse distance field strength at 1 kilometer. This is accomplished by plotting the measured field strengths on transparent log-log graph paper similar to that used for Graphs 1 to 20 and superimposing the plotted graph over the Graph corresponding to the frequency of the station measured. The plotted graph is then shifted vertically until the plotted measurement data is best aligned with one of the conductivity curves on the Graph; the intersection of the inverse distance line on the Graph with the 1 kilometer abscissa on the plotted graph determines the inverse distance field strength at 1 kilometer. For other values of dielectric constant, the following procedure may be used to determine the dielectric constant on the ground, the ground conductivity and the inverse distance field strength at 1 kilometer. Graph 21 gives the relative values of groundwave field strength over a plane earth as a function of the numerical distance p and phase angle b. On graph paper with coordinates similar to those of Graph 21, plot the measured values of field strength as ordinates versus the corresponding distances from the antenna in kilometers as abscissae. The data should be plotted only for distances greater than one wavelength (or, when this is greater, five times the vertical height of the antenna in the case of a nondirectional antenna or 10 times the spacing between the elements of a directional antenna) and for distances less than $80f^{1/3}$MHz kilometers (i.e., 80 kilometers at 1 MHz). Then, using a light box, place the plotted graph over Graph 21 and shift the plotted graph vertically and horizontally (making sure that the vertical lines on both sheets are parallel) until the best fit with the data is obtained with one of the curves on Graph 21. When the two sheets are properly lined up, the value of the field strength corresponding to the intersection of the inverse distance line of Graph 21 with the 1 kilometer abscissa on the data sheet is the inverse distance field strength at 1 kilometer, and the values of the numerical distance at 1 kilometer, p_1, and of b are also determined. Knowing the values of b and p_1 (the numerical distance at one kilometer), we may substitute in the following approximate values of the ground conductivity and dielectric constant.

$$x \cong \frac{\pi}{p}\cdot\left(\frac{R}{\lambda}\right) \cos b \qquad \text{(Eq. 1)}$$

$(R/\lambda)_1$ = Number of wavelengths in 1 kilometer,

* * * * *

f_{MHz} = frequency expressed in megahertz,

$$\epsilon \cong \chi \tan b - 1 \qquad \text{(Eq. 3)}$$

ϵ = dielectric constant on the ground referred to air as unity.

First solve for χ by substituting the known values of p_1, $(R/\lambda)_1$, and cos b in equation (1). Equation (2) may then be solved for δ and equation (3) for ϵ. At distances greater than $80/f^{1/3}$ MHz kilometers the curves of Graph 21 do not give the correct relative values of field strength since the curvature of the earth weakens the field more rapidly than these plane earth curves would indicate. Thus, no attempt should be made to fit experimental data to these curves at the larger distances.

Note: For other values of dielectric constant, use can be made of the computer program which was employed by the FCC in generating the curves in Graphs 1 to 20. For information on obtaining a printout of this program, call or write the Consumer Affairs Office, Federal Communications Commission, Washington, DC 200554, (202) 632–7000.

(d) At sufficiently short distances (less than 55 kilometers at AM broadcast frequencies), such that the curvature of the earth does not introduce an additional attenuation of the waves, the curves of Graph 21 may be used to determine the groundwave field strength of transmitting and receiving antennas at the surface of the earth for any radiated power, frequency, or set of ground constants. First, trace the straight inverse distance line corresponding to the power radiated on transparent log-log graph paper similar to that of Graph 21, labelling the ordinates of the chart in terms of field strength, and the abscissae in terms of distance. Next, using the formulas given on Graph 21, calculate the value of the numerical distance, p, at 1 kilometer, and the value of b. Then superimpose the log-log graph paper over Graph 21, shifting it vertically until both inverse distance lines coincide and shifting it horizontally until the numerical distance at 1 kilometer on Graph 21 coincides with 1 kilometer on the log-log graph paper. The curve of Graph 21 corresponding to the calculated value of b is then traced on the log-log graph paper giving the field strength versus distance in kilometers.

(e) This paragraph consists of the following Graphs 1 to 20 and 21.

Note: The referenced graphs are not published in the CFR, nor will they be included in the Commission's automated rules system. For information on obtaining copies of the graphs call or write the Consumer Affairs Office, Federal Communications Commission, Washington, DC 20554, Telephone: (202) 632–7000.

30. Section 73.185 is amended by revising paragraph (b), by removing paragraph (c), by revising and redesignating paragraphs (d) and (e) as (c) and (d), by removing paragraphs (i) and (j), and revising and redesignating paragraphs (h) and (k) as (e) and (f), and by revising newly redesignated paragraph (f)(2) to read as follows:

§ 73.185 Computation of interfering signal.

* * * * *

(b) For skywave signals from stations operating on all channels, interference shall be determined from the appropriate formulas and Figure 6a contained in § 73.190.

(c) The formulas in § 73.190(d) depicted in Figure 6a of § 73.190, entitled "Angles of Departure versus Transmission Range" are to be used in determining the angles in the vertical pattern of the antenna of an interfering station to be considered as pertinent to transmission by one reflection. To provide for variation in the pertinent vertical angle due to variations of ionosphere height and ionosphere scattering, the curves 2 and 3 indicate the upper and lower angles within which the radiated field is to be considered. The maximum value of field strength occurring between these angles shall be used to determine the multiplying factor to apply to the 10 percent skywave field intensity value determined from Formula 2 in § 73.190. The multiplying factor is found by dividing the maximum radiation between the pertinent angles by 100 mV/m.

(d) Example of the use of skywave curves and formulas: Assume a proposed new Class B station from which interference may be expected is located at a distance of 724 kilometers from a licensed Class B station. The proposed station specifies geographic coordinates of 40°00'00"N and 100° 00'00"W and the station to be protected is located at an azimuth of 45° true at geographic coordinates of 44°26'05"N and 93°32'54"W. The critical angles of radiation as determined from Figure 6a of § 73.190 for use with Class B stations are 9.6° and 16.6°. If the vertical pattern of the antenna of the proposed station in the direction of the existing station is such that, between the angles of 9.6° and

16.6° above the horizon the maximum radiation is 260 mV/m at one kilometer, the value of the 50% field, as derived from Formula 1 of § 73.190, is 0.06217 mV/m at the location of the existing station. To obtain the value of the 10% field, the 50% value must be adjusted by a factor derived from Formula 2 of § 73.190. The value in this case is 8.42 dB. Thus, the 10% field is 0.1616 mV/m. Using this in conjunction with the co-channel protection ratio of 26 dB, the resultant nighttime limit from the proposed station to the licensed station is 3.232 mV/m.

(e) In the case of an antenna which is non-directional in the horizontal plane, the vertical distribution of the relative fields should be computed pursuant to § 73.160. In the case of an antenna which is directional in the horizontal plane, the vertical pattern in the great circle direction toward the point of reception in question must first be calculated. In cases where the radiation in the vertical plane, at the pertinent azimuth, contains a large lobe at a higher angle than the pertinent angle for one reflection, the method of calculating interference will not be restricted to that just described; each such case will be considered on the basis of the best knowledge available.

(f) In performing calculations to determine permissible radiation from stations operating presunrise or postsunset in accordance with § 73.99, calculated diurnal factors will be multiplied by the values of skywave field strength for such stations obtained from Formula 1 or 2 of § 73.190.

(1) * * *

(2) Constants used in calculating diurnal factors for the presunrise and postsunset periods are contained in paragraphs (f)(2) (i) and (ii) of this section respectively. The columns labeled T_{mp} represent the number of hours before and after sunrise and sunset at the path midpoint.

* * * * *

31. Section 73.187 is amended by revising paragraphs (a) and (b) to read as follows:

§ 73.187 Limitation on daytime radiation.

(a)(1) Except as otherwise provided in paragraphs (a)(2) and (3) of this section, no authorization will be granted for a Class B or Class D station on a frequency specified in § 73.25 if the proposed operation would radiate during the period of critical hours (the two hours after local sunrise and the two hours before local sunset) toward any point on the 0.1 mV/m contour of a co-channel U.S. Class A station, at or below the pertinent vertical angle determined from Curve 2 of Figure 6a of § 73.190, values in excess of those obtained as provided in paragraph (b) of this section.

(2) The limitation set forth in paragraph (a)(1) of this section shall not apply in the following cases:

(i) Any Class B or Class D operation authorized before November 30, 1959; or

(ii) For Class B and Class D stations authorized before November 30, 1959, subsequent changes of facilities which do not involve a change in frequency, an increase in radiation toward any point on the 0.1 mV/m contour of a co-channel U.S. Class A station, or the move of transmitter site materially closer to the 0.1 mV/m contour of such Class A station.

(3) A Class B or Class D station authorized before November 30, 1959, and subsequently authorized to increase daytime radiation in any direction toward the 0.1 mV/m contour of a co-channel U.S. Class A station (without a change in frequency or a move of transmitter site materially closer to such contour), may not, during the two hours after local sunrise or the two hours before local sunset, radiate in such directions a value exceeding the lesser of:

(i) The value radiated in such directions with facilities last authorized before November 30, 1959, or

(ii) The limitation specified in paragraph (a)(1) of this section.

(b) To obtain the maximum permissible radiation for a Class B or Class D station on a given frequency from 640 through 990 kHz, multiply the radiation value obtained for the given distance and azimuth from the 500 kHz chart (Figure 9 of § 73.190) by the appropriate interpolation factor shown in the K_{500} column of paragraph (c) of this section; and multiply the radiation value obtained for the given distance and azimuth from the 1000 kHz chart (Figure 10 of § 73.190) by the appropriate interpolation factor shown in the K_{1000} column of paragraph (c) of this section. Add the two products thus obtained; the result is the maximum radiation value applicable to the Class B or Class D station in the pertinent directions. For frequencies from 1010 to 1580 kHz, obtain in a similar manner the proper radiation values from the 1000 and 1600 kHz charts (Figures 10 and 11 of § 73.190), multiply each of these values by the appropriate interpolation factors in the K'_{1000} and K'_{1600} columns in paragraph (c) of this section, and add the products.

* * * * *

32. Section 73.189 is amended by revising paragraphs (b)(2)(i), (b)(2)((ii), (b)(2)(ii), (b)(3), and (b)(6), to read as follows:

§ 73.189 Minimum antenna heights or field strength requirements.

* * * * *

(b) * * *

(2) * * *

(i) Class C stations, and stations in Alaska, Hawaii, Puerto Rico and the U.S. Virgin Islands on 1230, 1240, 1340, 1400, 1450 and 1490 kHz that were formerly Class C and were redesignated as Class B pursuant to § 73.26(b), 45 meters or a minimum effective field strength of 241 mV/m for 1 kW (121 mV/m for 0.25 kW). (This height applies to a Class C station on a local channel only. Curve A shall apply to any Class C stations in the 48 conterminous States that are assigned to Regional channels.)

(ii) Class A (Alaska), Class B and Class D stations other than those covered in § 73.189(b)(2)(i), a minimum effective field strength of 282 mV/m for 1 kW.

(iii) Class A stations, a minimum effective field strength of 362 mV/m for 1 kW.

(3) The heights given on the graph for the antenna apply regardless of whether the antenna is located on the ground or on a building. Except for the reduction of shadows, locating the antenna on a building does not necessarily increase the efficiency and where the height of the building is in the order of a quarter wave the efficiency may be materially reduced.

* * * * *

(6) The main element or elements of a directional antenna system shall meet the above minimum requirements with respect to height or effective field strength. No directional antenna system will be approved which is so designed that the effective field of the array is less than the minimum prescribed for the class of station concerned, or in case of a Class A station less than 90 percent of the ground wave field which would be obtained from a perfect antenna of the height specified by Figure 7 of § 73.190 for operation on frequencies below 1000 kHz, and in the case of a Class B or Class D station less than 90 percent of the ground wave field which would be obtained from a perfect antenna of the height specified by Figure 7 of § 73.190 for operation on frequencies below 750 kHz.

33. Section 73.190 is amended by revising Figures 7 and 8 to reflect the use of metric units and by revising paragraphs (a), (b), (c), and (e) to read as follows:

§ 73.190 Engineering charts and related formulas.

(a) This section consists of the following Figures: 2, r3, 5, 6a, 7, 8, 9, 10, 11, 12, and 13. Additionally, formulas that are directly related to graphs are included.

(b) Formula 1 is used for calculation of 50% skywave field strength values.

Formula 1. Skywave field strength, 50% of the time (at SS+6):

The skywave field strength, $F_c(50)$, for a characteristic field strength of 100 mV/m at 1 km is given by:

$$F_c(50) = (97.5 - 20\log D) - (2\pi + 4.95\tan^2\phi_M)\sqrt{\left(\frac{D}{1000}\right)} \quad dB(\mu V/m) \quad \text{(Eq. 1)}$$

The slant distance, D, is given by:

$$D = \sqrt{40{,}000 + d^2} \quad km \quad \text{(Eq. 2)}$$

The geomagnetic latitude of the midpoint of the path, Φ_M, is given by:

$\Phi_M = \arcsin[\sin a_M \sin 78.5° + \cos a_M \cos 78.5° \cos(69 + b_M)]$ degrees (Eq. 3)

The short great-circle path distance, d, is given by:

$$d = 111.18d^\circ \quad km \quad \text{(Eq. 4)}$$

Where:

$d^\circ = \arccos[\sin a_T \sin a_R + \cos a_T \cos a_R \cos(b_R - b_T)]$ degrees (Eq.5)

Where:

a_T is the geographic latitude of the transmitting terminal (degrees)

a_R is the geographic latitude of the receiving terminal (degrees)

b_T is the geographic longitude of the transmitting terminal (degrees)

b_R is the geographic longitude of the receiving terminal (degrees)

a_M is the geographic latitude of the midpoint of the great-circle path (degrees) and is given by:

b_M is the geographic longitude of the midpoint of the great-circle path (degrees) and is given by:

$$a_M = 90 - \arccos\left[\sin a_R \cos\left(\frac{d^\circ}{2}\right) + \cos a_R \sin\left(\frac{d^\circ}{2}\right)\left(\frac{\sin a_T - \sin a_R \cos d^\circ}{\cos a_R \sin d^\circ}\right)\right] \quad \text{(Eq. 6)}$$

$$b_M = b_R + k\left[\arccos\left(\frac{\cos\left(\frac{d^\circ}{2}\right) - \sin a_R \sin a_M}{\cos a_R \cos a_M}\right)\right] \quad \text{(Eq. 7)}$$

Note (1): If $|\Phi_M|$ is greater than 60 degrees, equation (1) is evaluated for $|\Phi_M| = 60$ degrees.

Note (2): North and east are considered positive; south and west negative.

Note (3): In equation (7), $k = -1$ for west to east paths (i.e., $b_R > b_T$), otherwise $k = 1$.

(c) Formula 2 is used for calculation of 10% skywave field strength values.

Formula 2. Skywave field strength, 10% of the time (at SS+6):

The skywave field strength, $F_c(10)$, is given by:

$F_c(10) = F_c(50) + \Delta$ dB(μV/m)

Where:

$\Delta = 6$ when $|\Phi_M| < 40$

$\Delta = 0.2\,|\Phi_M| - 2$ when $40 \leq |\Phi_M| \leq 60$

$\Delta = 10$ when $|\Phi_M| > 60$

* * * * *

(e) In the event of disagreement between computed values using the formulas shown above and values obtained directly from the figures, the computed values will control.

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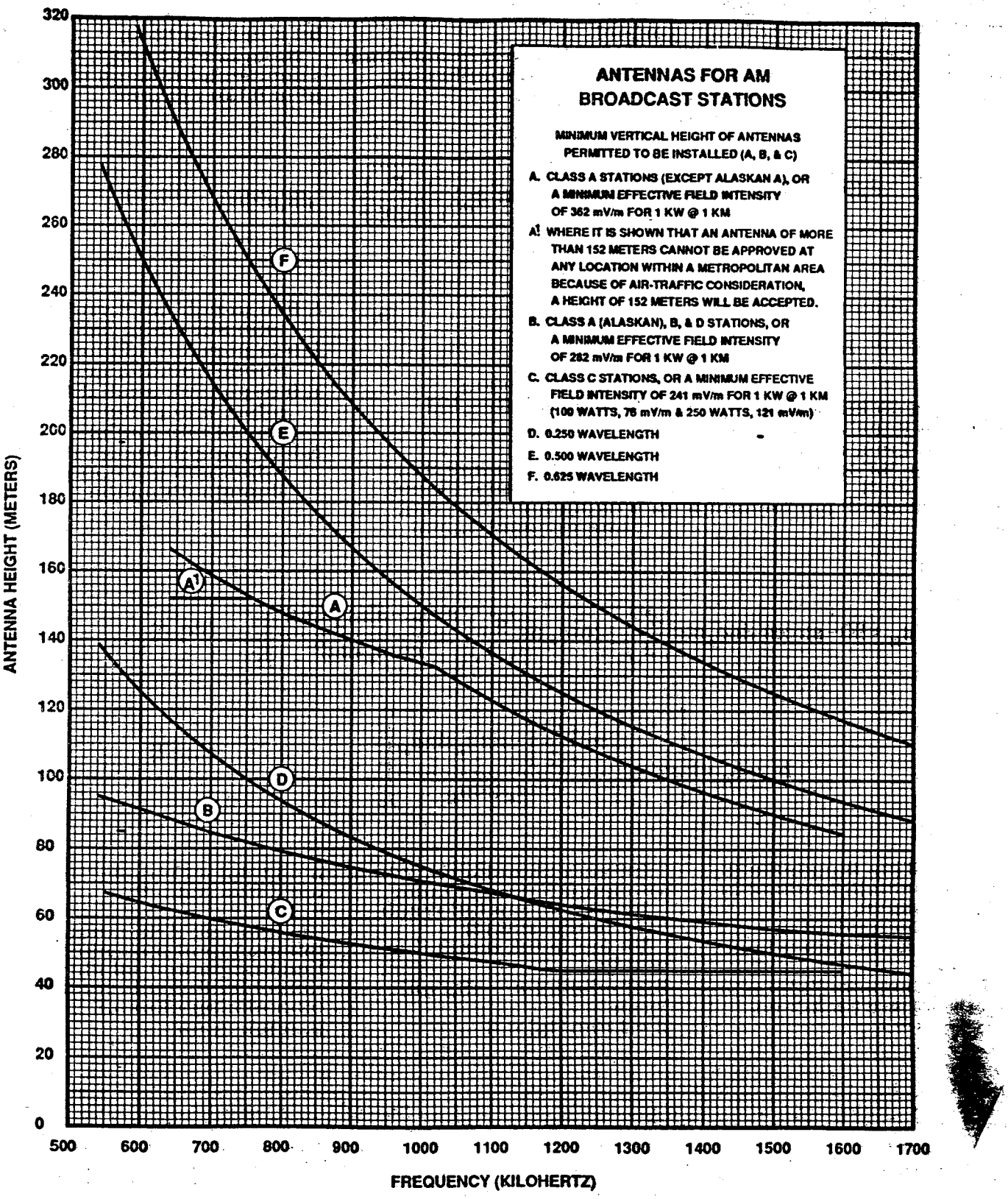
ANTENNAS FOR AM BROADCAST STATIONS
MINIMUM VERTICAL HEIGHT OF ANTENNAS PERMITTED TO BE INSTALLED (A, B, & C)
A. CLASS A STATIONS (EXCEPT ALASKAN A), OR A MINIMUM EFFECTIVE FIELD INTENSITY OF 362 mV/m FOR 1 KW @ 1 KM
A1 WHERE IT IS SHOWN THAT AN ANTENNA OF MORE THAN 152 METERS CANNOT BE APPROVED AT ANY LOCATION WITHIN A METROPOLITAN AREA BECAUSE OF AIR-TRAFFIC CONSIDERATION, A HEIGHT OF 152 METERS WILL BE ACCEPTED.
B. CLASS A (ALASKAN), B, & D STATIONS, OR A MINIMUM EFFECTIVE FIELD INTENSITY OF 282 mV/m FOR 1 KW @ 1 KM
C. CLASS C STATIONS, OR A MINIMUM EFFECTIVE FIELD INTENSITY OF 241 mV/m FOR 1 KW @ 1 KM (100 WATTS, 76 mV/m & 250 WATTS, 121 mV/m)
D. 0.250 WAVELENGTH
E. 0.500 WAVELENGTH
F. 0.625 WAVELENGTH
ANTENNA HEIGHT (METERS)
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
FREQUENCY (KILOHERTZ)
F
E
A1
A
D
B
C

Figure 7

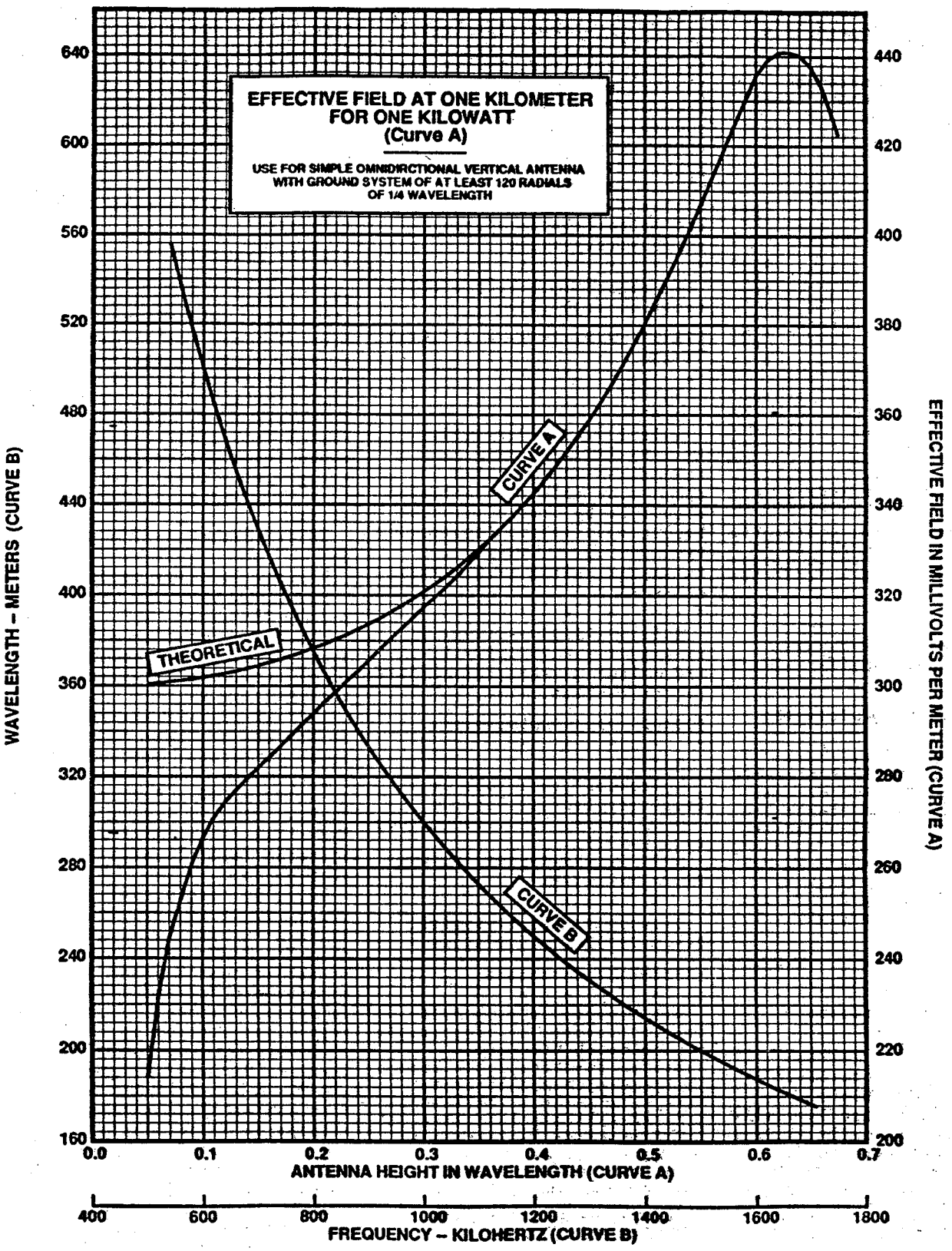

Figure 8

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34. Section 73.1030 is amended by revising the table in paragraph (b) to read as follows:

§ 73.1030 Notifications concerning interference to radio astronomy, research and receiving installations.

* * * * *

(b) * * *

Frequency range	Field strength in authorized bandwidth of service (mV/m)	Power flux density in authorizd bandwidth of service (dBW/m²) [1]
Below 540 kHz	10	−65.8
540 to 1700 kHz	20	−59.8
1.7 to 470 MHz	10	[2] −65.8
470 to 890 MHz	30	[2] −56.2
Above 890 MHz	1	[2] −85.8

[1] Equivalent values of power flux density are calculated assuming free space characteristic impedance of 376.7=120 ohms.

[2] Space stations shall conform to the power flux density limits at the earth's surface specified in appropriate parts of the FCC rules, but in no case should exceed the above levels in any 4 kHz band for all angles of arrival.

* * * * *

35. Section 73.1125 is amended by adding a note at the end of the section to read as follows:

§ 73.1125 Station main studio location.

* * * * *

Note: AM stations that simulcast on a frequency in the 535–1605 kHz band and on a frequency in the 1605–1705 kHz band need only have the studio be located within the 5 mV/m contour of the lower band operation during the term of the simultaneous operating authority. Upon termination of the 535–1605 kHz band portion of the dual frequency operation, the above rule shall then become applicable to the remaining operation in the 1605–1705 kHz band.

36. A new paragraph (c) is added to § 73.1150 to read as follows:

§ 73.1150 Transferring a station.

* * * * *

(c) Licensees and/or permittees authorized to operate in the 535–1605 kHz and in the 1605–1705 kHz band pursuant to the Report and Order in MM Docket No. 87–267 will not be permitted to assign or transfer control of the license or permit for a single frequency during the period that joint operation is authorized.

37. Section 73.1201 is amended by revising (c)(2) to read as follows:

§ 73.1201 Station identification.

* * * * *

(c) * * *

(2) *Simultaneous AM (535–1605 kHz) and AM (1605–1705 kHz broadcasts.* If the same licensee operates an AM broadcast station in the 535–1605 kHz band and an AM broadcast station in the 1605–1705 kHz band with both stations licensed to the same community and simultaneously broadcasts the same programs over the facilities of both such stations, station identification announcements may be made jointly for both stations for periods of such simultaneous operations.

* * * * *

38 Paragraph (b)(1)(ii) of § 73.1570 is revised to read as follows:

§ 73.1570 Modulation levels: AM, FM, and TV aural.

* * * * *

(b) * * *

(1) * * *

(ii) For AM stations transmitting telemetry signals for remote control or automatic transmission system operation, the amplitude of modulation of the carrier by the use of subaudible tones must not be higher than necessary to effect reliable and accurate data transmission and may not, in any case, exceed 6%.

* * * * *

39. Section 73.1650 is amended by revising paragraph (b)(2), introductory text, and adding paragraphs (b)(2)(i) and (b)(2)(ii) to read as follows:

§ 73.1650 International agreements.

* * * * *

(b) * * *

(2) Regional Agreements for the Broadcasting Service in Region 2:

(i) MF Broadcasting 535–1605 kHz, Rio de Janeiro, 1981.

(ii) MF Broadcasting 1605–1705 kHz, Rio de Janeiro, 1988.

* * * * *

40. A note is added at the end of Section 73.1665 to read as follows:

§ 73.1665 Main transmitters.

* * * * *

Note: Pending the availability of AM broadcast transmitters that are type-accepted for use in the 1605–1705 kHz band, transmitters that are type-accepted for use in the 535–1605 kHz band as shown on the FCC's Radio Equipment List may be utilized in the 1605–1705 kHz band if it is shown that the requirements of § 73.44 have been met. FCC approval of the manufacturer's application for type-acceptance will supersede the applicability of this note.

41. Paragraph (c) in § 73.1705 is revised to read as follows:

§ 73.1705 Time of operation.

* * * * *

(c) AM stations in the 535–1705 kHz band will be licensed for unlimited time. In the 535–1605 kHz band, stations that apply for share time and specified hours operations may also be licensed. AM stations licensed to operate daytime-only and limited-time may continue to do so; however, no new such stations will be authorized, except for fulltime stations that reduce operating hours to daytime-only for interference reduction purposes.

42. Section 73.1725 is revised to read as follows:

§ 73.1725 Limited time.

(a) Operation is applicable only to Class B (secondary) AM stations on a clear channel with facilities authorized before November 30, 1959. Operation of the secondary station is permitted during daytime and until local sunset if located west of the Class A station on the channel, or until local sunset at the Class A station if located east of that station. Operation is also permitted during nighttime hours not used by the Class A station or other stations on the channel.

(b) No authorization will be granted for:

(1) A new limited time station;

(2) A limited time station operating on a changed frequency;

(3) A limited time station with a new transmitter site materially closer to the 0.1 mV/m contour of a co-channel U.S. Class A station; or

(4) Modification of the operating facilities of a limited time station resulting in increased radiation toward any point on the 0.1 mV/m contour of a co-channel U.S. Class A station during the hours after local sunset in which the limited time station is permitted to operate by reason of location east of the Class A station.

(c) The licensee of a secondary station which is authorized to operate limited time and which may resume operation at the time the Class A station (or stations) on the same channel ceases operation shall, with each application for renewal of license, file in triplicate a copy of its regular operating schedule. It shall bear a signed notation by the licensee of the Class A station of its objection or lack of objection thereto. Upon approval of such operating schedule, the FCC will affix its file mark and return one copy to the licensee authorized to operate limited time. This shall be posted with the station license and considered as a part thereof. Departure from said operating schedule will be permitted only pursuant to § 73.1715 (Share time).

43. Section 73.1740 is amended by revising paragraph (a)(1)(i) to read as follows:

§ 73.1740 Minimum operating schedule.

(a) * * *

(1) * * *

(i) Class D stations which have been authorized nighttime operations need comply only with the minimum requirements for operation between 6 a.m. and 6 p.m., local time.

* * * * *

44. Paragraph (a) of § 73.3516 is revised to read as follows:

§ 73.3516 Specification of facilities.

(a) An application for facilities in the AM, FM, or TV broadcast services or low power TV service shall be limited to one frequency, or channel, and no application will be accepted for filing if it requests an alternate frequency or channel. Applications specifying split frequency AM operations using one frequency during daytime hours complemented by a different frequency during nighttime hours will not be accepted for filing.

* * * * *

45. New paragraphs (c) and (d) and Notes 1 and 2 are added to § 73.3517 to read as follows:

§ 73.3517 Contingent applications.

* * * * *

(c) Upon payment of the filing fees prescribed in § 1.1111 of this chapter, the Commission will accept two or more applications filed by existing AM licensees for modification of facilities that are contingent upon granting of both, if granting such contingent applications will reduce interference to one or more AM stations or will otherwise increase the area of interference-free service. The applications must state that they are filed pursuant to an interference reduction arrangement and must cross-reference all other contingent applications.

(d) Modified proposals curing conflicts between mutually exclusive clusters of applications filed in accordance with paragraphs (c) of this section will be accepted for 60 days following issuance of a public notice identifying such conflicts.

Note 1: No application to move to a frequency in the 1605–1705 kHz band may be part of any package of contingent applications associated with a voluntary agreement.

Note 2: In cases where no modified proposal is filed pursuant to paragraph (d) of this section, the Commission will grant the application resulting in the greatest net interference reduction.

46. Paragraph (i) in § 73.3550 is revised to read as follows:

§ 73.3550 Requests for new or modified call sign assignments.

* * * * *

(i) Stations in different broadcast services (or operating jointly in the 535–1605 kHz band and in the 1605–1705 kHz band) which are under common control may request that their call signs be conformed by the assignment of the same basic call sign if that call sign is not being used by a non-commonly owned station. For the purposes of this paragraph, 50% or greater common ownership shall constitute a prima facie showing of common control.

* * * * *

47. Section 73.3555 is amended by revising Note 4 and adding new Notes 8, 9 and 10 to read as follows:

§ 73.3555 Multiple ownership.

* * * * *

Note 4: Paragraphs (a) through (d) of this section will not be applied to require divestiture, by any licensee, of existing facilities, and will not apply to applications for increased power for Class C stations, to applications for assignment of license or transfer of control filed in accordance with § 73.3540(f) or § 73.3541(b) of this part, or to applications for assignment of license or transfer of control to heirs or legatees by will or intestacy if no new or increased overlap would be created between commonly owned, operated, or controlled broadcast stations in the same service and if no new encompassment of communities proscribed in paragraphs (b) and (c) of this section as to commonly owned, operated, or controlled broadcast stations or daily newspapers would result. Said paragraphs will apply to all applications for new stations, to all other applications for assignment or transfer, and to all applications for major changes in existing stations except major changes that will result in overlap of contours of broadcast stations in the same service with each other no greater than already existing. (The resulting areas of overlap of contours of such broadcast stations with each other in such major change cases may consist partly or entirely of new terrain. However, if the population in the resulting overlap areas substantially exceeds that in the previously overlap areas, the Commission will not grant the application if it finds that to do so would be against the public interest, convenience, or necessity.) Commonly owned, operated, or controlled broadcast stations, with overlapping contours or with community-encompassing contours prohibited by this section may not be assigned or transferred to a single person, group, or entity, except as provided above in this note. If a commonly owned, operated, or controlled broadcast station and daily newspaper fall within the encompassing proscription of this section, the station may not be assigned to a single person, group or entity if the newspaper is being simultaneously sold to such single person, group or entity.

* * * * *

Note 8: Paragraph (a)(1) of this section will not apply to an application for an AM station license in the 535–1605 kHz band where grant of such application will result in the overlap of 5 mV/m groundwave contours of the proposed station and that of another AM station in the 535–1605 kHz band that is commonly owned, operated or controlled if the applicant shows that a significant reduction in interference to adjacent or co-channel stations would accompany such common ownership. Such AM overlap cases will be considered on a case-by-case basis to determine whether common ownership, operation or control of the stations in question would be in the public interest. Applicants in such cases must submit a contingent application for the major or minor facilities change needed to achieve the interference reduction along with the application which seeks to create the 5 mV/m overlap situation.

Note 9: Paragraph (a)(1) of this section will not apply to an application for an AM station license in the 1605–1705 kHz band where grant of such application will result in the overlap of the 5 mV/m groundwave contours of the proposed station and that of another AM station in the 535–1605 kHz band that is commonly owned, operated or controlled. Paragraphs (d)(1)(i) and (d)(1)(ii) of this section will not apply to an application for an AM station license in the 1605–1705 kHz band by an entity that owns, operates, controls or has a cognizable interest in AM radio stations in the 535–1605 kHz band.

Note 10: Authority for joint ownership granted pursuant to Note 9 will expire at 3 a.m. local time on the fifth anniversary of the date of issuance of a construction permit for an AM radio station in the 1605–1705 kHz band.

48. Section 73.3564 is amended by adding a new paragraph (e) to read as follows:

§ 73.3564 Acceptance of applications.

* * * * *

(e) Applications for operation in the 1605–1705 kHz band will be accepted only if filed pursuant to the terms of § 73.30(b).

§ 73.3570 [Redesignated as § 73.23]

49. Section 73.3570 is redesignated as § 73.23.

50. Section 73.3571 is amended by revising paragraphs (a), and (a)(1), by adding a new paragraph (a)(3), by removing paragraphs (d)(1) and (e), by revising and redesignating paragraphs (d)(2), (d)(3) and (d)(4) as (d)(1), (d)(2) and (d)(3), by redesignating paragraphs (f) through (i) as (e) through (h) and revising newly redesignated paragraphs (f) and (h), by redesignating paragraphs (j)(1), (j)(2), (j)(3), and (j)(4) as (i)(1), (i)(2), (i)(3), and (i)(4) and revising the text of newly redesignated paragraph (i)(1), and be redesignating paragraphs (k) and (l) as paragraphs (j) and (k) to read as follows:

§ 73.3571 Processing of AM broadcast station applications.

(a) Applications for AM broadcast facilities are divided into three groups.

(1) In the first group are applications for new stations or for major changes in the facilities of authorized stations. A major change is any increase in power except where accompanied by a complimentary reduction of antenna efficiency which leads to the same amount, or less, radiation in all directions (in the horizontal and vertical planes when skywave propagation is involved, and in the horizontal plane only for daytime considerations), relative to the presently authorized radiation levels, or any change in frequency, hours of operation, or community of license. However, the FCC may, within 15 days after the acceptance for filing of any other application for modification of facilities, advise the applicant that such application is considered to be one for a major change and therefore is subject to the provisions of §§ 73.3580 and 1.1111 of this chapter pertaining to major changes.

(2) * * *

(3) The third group consists of applications for operation in the 1605–1705 kHz band which are filed subsequent to Commission notification that allotments have been awarded to petitioners under the procedure specified in § 73.30.

* * * * *

(d) Applications proposing to increase the power of an AM station are subject to the following requirements:

(1) In order to be acceptable for filing, any application which does not involve a change in site must propose at least a 20% increase in the station's nominal power.

(2) Applications involving a change in site are not subject to the requirements in paragraph (d)(1) of this section.

(3) Applications for nighttime power increases for Class D stations are not subject to the requirements of this section and will be processed as minor changes.

* * * * *

(f) Applications for change of license to change hours of operation of a Class C station, to decrease hours of operation of any other class of station, or to change station location involving no change in transmitter site will be considered without reference to the processing line.

* * * * *

(h) When an application which has been designated for hearing has been removed from the hearing docket, the application will be returned to its proper position (as determined by the file number) in the processing line. Whether or not a new file number will be assigned will be determined pursuant to paragraph (i) of this section, after the application has been removed from the hearing docket.

(i)(1) A new file number will be assigned to an application for a new station, or for major changes in the facilities of an authorized station, when it is amended to change frequency, to increase power, to increase hours of operation, or to change station location. Any other amendment modifying the engineering proposal, except an amendment regarding the type of equipment specified, will also result in the assignment of a new file number unless such amendment is accompanied by a complete engineering study showing that the amendments would not involve new or increased interference problems with existing stations or other applications pending at the time the amendment is filed. If, after submission and acceptance of such an engineering amendment, subsequent examination indicates new or increased interference problems within either existing stations or other applications pending at the time the amendment was received at the FCC, the application will then be assigned a new file number and placed in the processing line according to the numerical sequence of the new file number.

* * * * *

51. New paragraph (c) is added to § 73.3598 to read as follows:

§ 73.3598 Period of construction.

* * * * *

(c) An existing AM station operating in the 535–1605 kHz band that receives a conditional permit to operate in the 1605–1705 kHz band; such permit shall specify a period of not more than 18 months from the date of issuance of the original construction permit within which construction shall be completed and application for license filed.

§ 73.4160 [Removed]

52. Section 73.4160 is removed.

53. Section 73.4255 is revised to read as follows:

§ 73.4255 Tax certificates: Issuance of.

(a) See Public Notice, FCC 76–337, dated April 21, 1976. 59 FCC 2d, 91; 41 FR 17605, April 27, 1976.

(b) See Report and Order MM Docket 87–267, FCC 91–303 adopted, September 26, 1991.

Part 90 of title 47 of the CFR is amended as follows:

54. The authority citation for part 90 continues to read as follows:

Authority: 47 U.S.C. 154 and 303.

55. Section 90.17(b) is amended by removing the entry for 1610 kHz and adding the entry for 540 through 1700 kHz to the Table of Frequencies to read as follows:

§ 90.17 Local Government Radio Service.

* * * * *

(b) * * *

Local government radio service frequency table

Frequency or band (kHz)	Class of station(s)	Limitations
530	Base (T.I.S.)	23
540–1700	do	23
2726	Base or Mobile	1

* * * * *

56. Section 90.242 is amended by revising paragraph (a) introductory text, the first sentence of (a)(2)(i), and (a)(2)(ii) to read as follows:

§ 90.242 Travelers information stations.

(a) The frequencies 530 through 1700 kHz in 10 kHz increments may be assigned to the Local Government Radio Service for the operation of Travelers Information Stations subject to the following conditions and limitations.

* * * * *

(2) * * *

(i) A statement certifying that the transmitting site of the Travelers Information Station will be located at least 15 km (9.3 miles) measured orthogonally outside the measured 0.5 mV/m daytime contour (0.1 mV/m for Class A stations) of any AM broadcast station operating on a first adjacent channel or at least 130 km (80.6 miles) outside the measured 0.5 mV/m daytime contour (0.1 mV/m for Class A stations) of any AM broadcast station operating on the same channel, or, if nighttime operation is proposed, outside the theoretical 0.5 mV/m–50% nighttime skywave contour of a U.S. Class A station. * * *

(ii) In consideration of possible cross-modulation and inter-modulation interference effects which may result from the operation of a Travelers Information Station in the vicinity of an AM broadcast station on the second or third adjacent channel, the applicant shall certify that he has considered these possible interference effects and, to the best of his knowledge, does not foresee interference occurring to broadcast stations operating on second or third adjacent channels.

* * * * *

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