

# Train Communications in the 1940s

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INDUCTIVE TRAIN COMMUNICATIONS		SPACE RADIO	
	1920	NYC tests with DeForest Wireless Co	
	1921	NYC tests with GE	
	1922		
	1923		
	1924	N&W tests with Westinghouse Electric & Mfg	
	1925		
	1926	NYC experimented Englewood and Elkhart	
	1927		
	1928	C&O with Westinghouse PRR tests with Westinghouse	
	1929		
B&LE testing US&S System	1930	FCC withdrew spectrum licenses for RR	
	1931		
	1932		
	1933		
	1934	CNJ and NH test PRR test	
	1935	PRR test	
	1936	PRR test	
B&LE operationalizes 2-way system	1937	PRR test	
	1938		
	1939		
CCC&StL installed	1940		
L&N installed			
PRR test with USS on Belvidere Branch	1941		
N&W installed	1942	PRR test	
CB&Q installed			
GN installed	1943		
KCS tests Aircraft Accessories system			
Milwaukee tests US&S system	1944		
PRR expands to 245 miles			
TRRA installed	1945	FCC assigned 60 channels between 152 and 162 mc for RR use	
KCS installed			
KCS operationalizes	1946	FCC Authorizes frequencies for ATSF, B&O, CB&Q, CRI&P, D&RGW, FEC, GM&O, Jacksonville Terminal, MP, NYC, NP, PM, SAL, UP	
ACL installed			
NKP installed			
C&O installed	1947	<i>Authorizations continue</i>	
D&RGW installed			
NYC installed			
DM&IR installed			

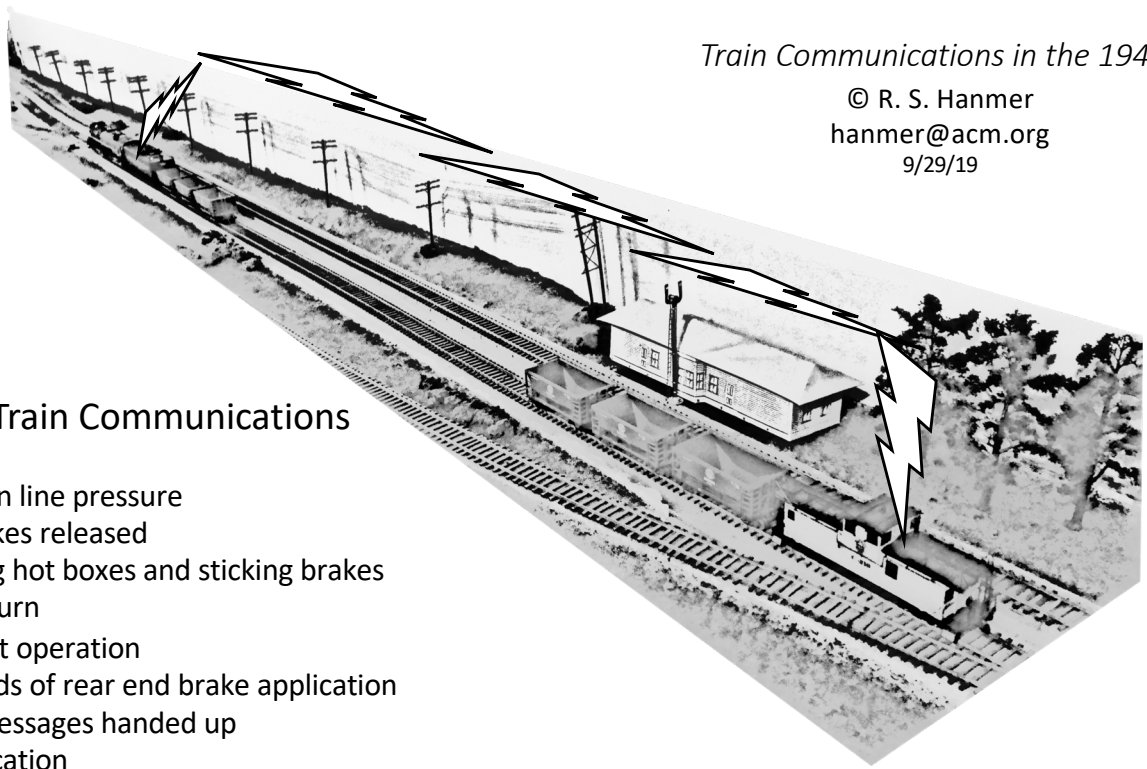
	Kilocycles	Application (some are tests)
AM	5	lower end of US&S range
	5.7	CB&Q
	5.7	B&LE Carrier
	7.7	CB&Q
FM	10	carrier threshold for US&S system
	80	PRR, train to train
	88	Milwaukee
	120	PRR
	144	PRR, train to wayside
	170	DM&IR
	170	IC
	189	DT&I
	250	upper end of US&S range
	152,000	FCC Allocated lower end
162,000	FCC Allocated upper end	

Voice frequency ranges between 30 Hz and 10 kHz  
Wired telephone network designed for voice in the range from .2 to 3.5 kHz

Inductive systems generally allocated 6 kc wide channel with 3 kc either side of carrier

This supports a voice band of 200-2750 cps

*In 1960 "Cycles per Second" were named "Hertz",  
Thus 1 kc = 1 kHz*



## Benefits of Train Communications

- Braking
  - Train line pressure
  - Brakes released
- Remediating hot boxes and sticking brakes
- Flagman return
- Multiple unit operation
- Avoid hazards of rear end brake application
- Exchange messages handed up
- Rear end location
  - Clear of trackwork
  - Point to let trainmen reboard
- Plan work
  - Emergencies
  - Time/schedule adherence
  - Spotting/picking up cars
- Alerting rear of fire dropping
- Signal/train order indications

## Milwaukee Road tests 12/44

(described in [Railway Age 1/13/45](#))

88 kc FM

50 mile range using lineside wires

2000' range using only rails

Caboose/Engine insulation from rails unnecessary

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