NORFOLK SOUTHERN

Communications Department

RADIO INSTRUCTIONS

The use of radios is governed by Norfolk Southern's guidelines and the Rules and Regulations of the Federal Communications Commission (F.C.C.). All Norfolk Southern employees must conform to these requirements.

These radio instructions consolidate those requirements so that Norfolk Southern's records, licenses, identification plates, etc. are handled uniformingly in an acceptable manner to ensure compliance.

Radios are essential to the efficient operation of Norfolk Southern's fleet. Not only do they enhance train safety, they also provide the facilities for a wide range of support in the operation of the railroad.

In a system as large as Norfolk Southern's, it is most important that certain guidelines are followed, so that all personnel handling radios provide uniform information for records on a systematic basis. In addition, guidelines are required to insure that radios are installed, assigned and used as senior management intends. Since the Communications Department is the servicing organization for radios, the policing of these policies and guidelines is Communications' responsibility and must be enforced.

New or revised instructions and/or radio bulletins must be added to this book when issued.

Any suggestions or ideas which would improve or add to these instructions should be submitted in writing to the Communications Department office in Atlanta.

J. R. Strickland
Assistant Vice President
Communications

Atlanta, Georgia
November 1, 1989

Section 1

General

SECTION I - GENERAL

This revision of Radio Instructions Section I supersedes and cancels any previous Radio Instructions for Section I.

A. A centralized radio records system exists in the office of Director-Engineering, Communications, Atlanta, Georgia. This record system consists of the following:

1. An individual record for each unit of radio equipment. This record will show the last date each unit was inspected and the location assignment of the radio unit. These maintenance records are retained on file as required by the F.C.C. rules. The F.C.C. has agreed by letter that they will accept Norfolk Southern's Radio Information System (RIS) as the required file based on security built into the program.

2. The ultimate assignment of the radio unit to a piece of rolling stock, work equipment, truck, individual or location is to be done by input to RIS via CRT from a Radio Shop, other authorized personnel or card record (Fora 699) mailed to the Atlanta Office.

B. It will be necessary for each person removing, installing, repairing, servicing or handling radio apparatus to report transfers, inspections and Norfolk Southern Corporation required information promptly to the RIS database via CRT or Form 699. Radio record inputs are described in greater detail in Radio Instructions Section II.

C. Units of radio equipment will be assigned a railroad identification (RRID) number. A metal identification plate, or engraving on the unit with the RRID number, must be applied to each piece of radio equipment. Where necessary, these RRID plates will carry the information required by the F.C.C., in addition to the RRID number. Certain units of radio equipment require additional markings in the form of embossing or special engraving markings. A description of the RRID plates, together with installation and special marking instructions, are given in Radio Instructions Section IV.

SECTION I - GENERAL

Any special applications not covered by the following listings, or the examples on the various drawings, should be handled on an individual basis with the Senior Communication Engineer's Office *in* Atlanta, Georgia.

Pursuant to Southern Railway and Norfolk and Western merging to become Norfolk Southern, we were confronted with different radio identification systems. For the purpose of standardization, a new system is now in use and will be used on all new radios. The older systems cannot be abolished, so they will remain in use.

The Southern Railway radio numbering system was as follows:

C-0100 thru C-4200 C-9000 thru C-9095	Mobile and Base Transceivers
C-5000 thru C-5187	Base Transceivers
D-0100 thru D-0917	Miscellaneous Transmit Only
D-1000 thru D-1909	End of Train Device
D-1910 thru D-2999	End of Train Device Receivers
D-3000 thru D-3999	End of Train Device Transmitters
D-5000 thru D-5144	Transmit Only and SAD/HBD/DED Voice Alarm
P-0100 thru P-I700 P-2000 thru P-4999 P-6400 thru P-7999 P-9000 thru P-9104 P-9900 thru P-9912	Portable Transceivers-Personal Issue, Yard Service and Misc.
P-5000 thru P-6399 P-8000 thru P-8999 H-0100 thru H-9999	Portable Transceivers Div. Units (Red) will have 'X' Prefix
R-3000 thru R-5550	Receiver Only and Repeaters
S-0001 thru S-0351	Speed Meters and Radio Locators
T-1000 thru T-3399 T-3500 thru T-4999 T-6000 thru T-9154	Engine and Caboose Transceivers
T-3400 thru T-3499 T-5000 thru T-5316	Locotrol Data Transceivers

SECTION* I - GENERAL

The [illegible] and [illegible] radio numbering system prior to 1987 was as follows:

The RRID will consist of eight characters, for example 'MAX86001'

First Character	Manufacturer (M=Motorola, W=Wabco, G=Gen. Elec, S=Sab Harmon, etc.)
Second Character	Primary use (A=Auto, B=Base, C=Caboose, D=Derrick, E=Executive, L=Locomotive, O=Other, W=Work Equipment, C=Communications, F= Transportation Supervisory, G=Material Management, H=Safety, I=Intermodal, K=Coal Piers, M=Mechanical, P=Police, S=Signal, T=Transportation, U=Unallocated, Y=Yard)
Third Character	SEE THIRD CHARACTER CHART - Page 4
Fourth and Fifth Characters	The year the radio was placed in service
Sixth, Seventh, and Eighth Characters	The number of radios received that year. The radio in the example would have been the first radio purchased in 1986

THIRD CHARACTER CHART IS ON THE NEXT PAGE

SECTION I - GENERAL

THIRD CHARACTER CHART OF N&W RRID

LETTER	AUTO	BASE	CABOOSE	LOCOMOTIVE	PORTABLE
A			PT-200	T-Micor	PT-200
B		Motran llOv	PT-500	T-Motran	
C	Motran 12v	Motran 12v		AAR Motran	
D	Micor	AAR Micor		AAR Micor	
E	Exec II	Exec II			
F	Century II	Century II			
6	Phoenix				
H					
I					
J					
K	Mocora 35				HT-220 Bas
L	Mocom 70	Mocom 70	Carryphone		HT-220 Uni
N	Maxar				MH-70 Bas
N	Moxy				MH-70 Uni
O					
P	CMVP	CMVP			
Q		Mitrek			
R					HT-440
S				Syntor	
T					Mt-500 Bas
U		Syntor			MT-500 Uni
V	Porta-Mobile				Porta-Mob
W					
X	MCX-100			MCX-100	
Y	Micro-Com			Trackstar	
Z		MCX-100	Syntor	3R	

SECTION I - GENERAL

The Norfolk & Western numbering system for 1987 & 1988 was as follows:

First two characters of an eight character designation:

LC Locotrol
LL Locomotive and/or Caboose
LR End of Train - Receiver
LT End of Train - Transceiver

VB Base Station
VM Mobile
VR Base Station - Receive Only
VT Base Station - Transmit only

PB Portable - Material Management
PC Portable - Communications
PE Portable - Engineering Maintenance of Way
PM Portable - Mechanical
PP Portable - PSSS
PR Portable - Transportation Line of Road (Red Case)
PS Portable - Signal and/or Signal & Electric
PT Portable - Transportation Personal Issue
PU Portable - Unallocated (Small Users, TOFC)
PY Portable - Transportation Yard
ZZ Anything not covered by above, such as Speed Radars

Third and Fourth Characters:

87 The year the radio was purchased. In this case, 1987
88 1988
etc.

Fifth, Sixth, Seventh and Eighth Characters:

5000 > Sequentially assigned each year starting with 5000
to) as radios are received from vendor.
9999)

SECTION- 1 - GENERAL

The new Norfolk Southern numbering system will be similar to the Southern numbering system. It is as follows:

C-420I thru C-4999 C-9096 thru C-9999	Mobile Transceivers
C-5I88 thru C-8999	Base Transceivers
D0918 thru D-0999	Miscellaneous Transmit Only and Derrick or Special Units
D-2301 thru D-2999	End of Train Device Receivers
D-3301 thru D-3999	End of Train Device Transmitters
D-5145 thru D-6999	Transmit Only and SAD/HBD/DED Voice Alarms
H-0100 thru H-9999	Portable Transceivers Div. Units will have 'X' Prefix (NOTE: some old Southern units fall in this group)
N-1000 thru N-9999 P-1701 thru P-1999 P-9105 thru P-9899 P-9913 thru P-9999	Portable Transceivers-Personal Issue, Yard Service and Misc.
R-5551 thru R-8000	Receiver Only and Repeaters
S-352 thru S-500	Speed Meters and Radio Locators
T-9155 thru T-9999	Engine and Caboose Transceivers
T-5317 thru T-5999	Locotrol Data Transceivers

SECTION I - GENERAL

D. Since radio equipment is transferred from territory to territory, and tfie same personnel will not always service the sane piece oJF equipment, it is very important that the RIS records be promptly updated by all. Authorized personnel will be able to input the proper information into the RIS to keep, tfte records current on all equipment. Refer to section H ftxrr instructions on changing radio records.

E. The Mechanical Department makes periodic inspections of every engine an tie system. This inspection is reported on LMIS, and this information updates RIS assignment records. An integral part of this program calls for a report on the following:

1. RRID nunberr *aS* radios installed on engine.

2. The date the; radio was seen on an engine.

3. An operational test of the equipment.

However, anytime Communications personnel observe rolling stock (engine, truck, MOW equipment, etc.), it is their responsibility to check the operation status of any radio equipment thereon and handle for correction with the individual responsible for the equipment.

A similar aarrangeMent exists at various points with regard to caboose radio maintenance, with such routine maintenance being performed, by a Mechanical Department Electrician. However, anytime Communications personnel board a caboose, they will determine the operating status of the radio equipment and be governed as in the preceding paragraph.

SECTION I - GENERAL

F. Radio shop personnel will not normally travel to outlying points to service radia equipment, as that is the responsibility of assigned department's forces to maintain its rolling stock, as well as to replace defective radio units with good spares, which they are supposed to keep on hand or have available in less critical service. It is the responsibility of the personnel at outlying points to return the defective equipment *ta* the representative radio shop for repair. Any departure from this practice, due to special conditions, should be handled on an individual basis with Communications Department supervisory personnel. Of course, full cooperation, as radio shop duties and personnel on duty will permit, should be given outlying General Foremen, Roadway Gang Mechanics or others in the event they telephone for assistance in clearing radio failures.

In the event a road trip has to be made to effect repairs at an outlying point, it must be arranged with local Communication supervisory personnel for handling as necessary.

G. It is emphasized that the RIS, constitutes the Central Radio Log for the entire Norfolk Southern system. Therefore, it is absolutely necessary that all information be entered accurately and promptly in order to conform with Norfolk Southern requirements. It is also emphasized that radio transfer and assignment records must be completed accurately and promptly to properly locate radio equipment to provide an accurate inventory list.

SECTION I - GENERAL

H. In addition to inspection requirements, no radio transmitter or receiver will be released from a radio shop unless its power output, or sensitivity as the case may be, meets minimum standards as outlined below:

Transmitter: Power output must be at least 75% of the manufacturer's specification for the equipment.

Receiver: Meets manufacturer's specifications or less sensitivity.

I. The data entered into computer records is sufficient to constitute a log for radio units. However, there are several additional requirements to be met to satisfy the requirements for base stations. These additional requirements are fully covered in Radio Instructions Section III, Base Stations.

J. In order to help prevent 'human error' in the entering of radio information into the computer records and to keep a local record with required initials, Form 698 must be maintained. Instructions for Form 698 are covered in Radio Instructions Section II.

K. New and Old Equipment:

1. Instructions for the initial report of a new radio set are described in Radio Instructions Section II and in the General Section of Section III.

2. Any changes in frequencies or radio characteristics (increase power, add channels, etc.) must be entered into the KIS records. If adding new frequencies other than basic channels known to have a current F.C.C. license, the Senior Communication Engineer's office in Atlanta must be involved to insure proper licensing is on hand or obtained.

3. Care must be taken to insure when a new radio is put in service as a replacement that the old radio is removed from service and retired information furnished as described below.

SECTION I - GENERAL

4. Bor asp radio tatem out of service which is to be cancfrijiiffd in the: Eadio Records, the Conununication ffisgineer's Office? in Atlanta must be notified by letter,, giving RRH3 number, model and serial number, if aval Table, retirement AFE or cost center, and advised that: the old plate has been destroyed. Also, disposition of the aid; radio should be included.

5. Attached as information at the end of this section is a copy of Norfolk Southern Corporate Procedure NS-80, Addition, Retirement, Replacement or Transfer of Radios.

fi. When, a radio is removed from active radio records, that number will no Hanger appear as active on the RIS data system. T&e radio will still appear on the RIS but will show cancelled in the status field. Normally, this nraaber will not be used for another radio.

L. Complete detailed instructions as to handling of equipment is beyond the scope of these instructions, as some procedures will be indigenous to a particular location. Supervisory personnel directly concerned with radio maintenance will from time to time issue instructions relative to their particular territories and problems, correlating these instructions with each other and with the Senior Communication Engineer's Office in Atlanta.

In cases vcbere such information will affect all radio shops, such information will be disseminated from the Atlanta Office in the form of Radio Bulletins. Such bulletins, as are in effect now, are listed and indexed in a separate section in the back of this Radio Instructions binder. Any bulletin not listed in the Index is hereby cancelled.

M. Field Communications supervisory personnel will arrange for a system of reporting radio troubles to maintainers on a local basis. No attempts will be made to formulate a uniform basis of trouble reporting beyond the program as set forth under Norfolk Southern Corporation Operating Rules, and local Communications Department instructions.

SECTION I - GENERAL

N. Availability off Despaired special radio supplies are as follows:

1. From Stationer,, Btorfolk Southern:

A) Fora 699 (-420 158158 0) - Radio Assignment Forms will be f&irmdished in bundles of 50 tags each.

B) FOOT 698- ((420 163347 0) - Radio Records Forms will be furnished? in quantity requested.

2. From CoBnunicstioos Department, Atlanta:

A) Metal identification plates where required.

B) Self-adhesive identification labels.

0. Paragraph 90-42T and 90.429(d) of Part 90, F.C.C. Rules and Regulations for Land Transportation Radio Service, states in part, for Transmitter Control Requirements as follows:

90.427 'Each transmitter shall be so installed and protected that it is not accessible to or capable of operation by persons other than those duly authorized by and under the control of the licensee..•..'

90.429(d) ᵀAt *&adt* control point the following facilities shall be installed: (1) . . . a pilot lamp or meter which will provide continual visual indication when the transmitter control circuits have been placed in a condition to produce radiation. . . . '

Due to F^C^d. rules quoted above when a radio is installed, every,[7] effort should be made to arrange with all authorized user personnel to provide a means of disabling the transmitter *a£* such radio equipment when no operator is present at; the control point. Further, personnel should be reminded- as to the seriousness of the failure on the part of the operators tor disable the radio equipment to prevent any unauthorised useb fe&ereof when it is left unattended. Also, all TJRAHSHET ON Xaotps in control heads of various radio equipment most' bet in functioning condition at all times. Prompt handling by user must be given to see that any burned out lamps are promptly replaced and any inoperative or defective TRANSMUT ON lamp circuits are promptly repaired. Communications personnel who detect failures in compliance with the above IF.C.C. rules must make every effort to have the condition remedied at a local level. In the event efforts do not successfully affect a remedy for the situation, this? fiact should be reported to Communications supervisory; personnel for further disposition.

P. Self inspection off Private Land Mobile Stations.

In an effort to insure compliance with Part 90 of the F.C.C. Rules, Norfolk Southern requires that the person responsible for licensed radio stations requlary check the following:

1. All land baaed and mobile equipment is operating on the frequencies shown on the license and the carrier frequency *a£* each transmitter is within the percentages of the assigned frequency shown in section 90.213 of the miles.

2. The locations of the base stations, control stations, wireline control points, mobile relay stations or other fixed stations are installed and operated at the locations shown on the license.

3. The antenna heights are in accordance with those shown on the license.

4. The output power of the transmitter or the effective radiated power at the antenna does not exceed that shown on the license.

SECTION 1 - GENERAL

5. Services anil maintenance of transmitters are performed *bf* qualified technicians

6. The station is identified in accordance with Section 90.425 *a£.* the Rules or as noted in Norfolk Southern Operating, Hadio Rules.

7. All- trEHiCTtitters are restricted to the minimum practicable transmission time.

8. ReasonaJxLe precautions are taken to avoid causing barafuL interference. This includes monitoring the frequency; for communications in progress before transmitting.

9. Any changes to the licensing information will be taMrfl**^ through the Senior Communications Office in Atlanta^

Supervisors s&ould implement a practice of regularly checking *t*mam-* nine items to minimize their chances of receiving a notice of rule violation from the F.C.C.

Q. The following policy will govern the Communications Department concerning:

1. Batteries for Portables:

A) System radio shops will stock size 'D' cell batteries (flashlight batteries) only to service radios which pass through the radio shops for routine maintenance or repair.

B) Batteries required in portable radios by any department at outlying points for field replacement must be purchased locally or through the Purchasing Department by the user department and charged to their cost center.

C) Replacement of rechargeable or disposable batteries used. in personal issue, yard or train service handie-talkies (belt or chest pack type) is the responsibility of the user department, except system radio shops will handle to replace any rechargeable batteries which fail within the manufacturer's warranty period.

SECTIONf I - GENERAL

D) If requested^ radio shops will furnish a replacement rechargeable Eiattery, provided a replacement can be ordered chargeable to the user department's cost center.

E) Battery replacement for all users is a costly expense, andt proper care must be taken to insure these eaqpenses are held to a minimum.

2. Antenna - Portables:

A) System radio shops will stock 'Heliflex' antennas only.

B) Portable antennas will normally be maintained as radios pass through a radio shop. Other replacements will be handled on a one-for-one basis only.

3. Antenna - Mobiles:

A) System radio shops will stock standard quarter wave roof mount antennas only.

B) Mobile antennas normally supplied for new installations will be quarter wave antenna mounted:

1) Front mount sets - center of roof or front cowl.

2) Rear mount sets - center of roof, center of trunk or (least preferred) rear cowl.

C) Replacement antennas will be supplied by radio shops utilizing above quarter wave stock. Any other antennas must be charged to user department's cost center.

4. Physical inspection of all units passing through shop will be made. If needed, any worn or damaged parts must be replaced.

SECTION I - GENERAL

5. Servicing BBestrictions;

A) Communications Department personnel will not install:^ service or repair any unauthorized equipment.

B) Uhau.tiBait's.zed equipment above includes any Norfolk Southerns equipment of a type not accepted by the Senicnr Communication Engineer and any personal equipment such as television receivers, citizen band radios,. AM or FM receivers, tape decks, etc.

R. Radio Replacement:

A Radio Examination Form RD-102 must be completed when radio units are f^md to be beyond economical repair and unit's replacement Is recommended. Copies of this form can be obtained from tbe Senior Communications Engineer's Office or General Superintendent's Office.

Communications Supervisor must arrange an inspection of the unit, provide details as to why the unit is beyond economical repair and an estimated cost of repairs. Copy of this form must be mailed to District Superintendent Communications for his approval, and their forwarded to General Superintendent - Operations for handling with responsible department officer for radio replacement. Copy of Procedure 80, which covers replacement of radios, is at the end of this section. Please note that the age of a unit does not automatically qualify it for replacement.

S. Regulator Circuit:

To insure that the voltage supply regulator circuit is operating properly and frequency remains in tolerance under varying voltage conditions, the following procedure must be performed on all mobile radios serviced:

1) Increase voltage 15 % - check frequency

2) Decrease voltage 15 % - check frequency

If frequency drifts beyond authorized limits, further tests on regulator circuit must be made to insure operation.

SECTION I - GENERAL

T. Frequency Tolerance:

Extra caution must be made to insure that radios are operating within frequency tolerance. Radio shop personnel must Monitor radio transmissions at all possible times. When radios are found to be beyond frequency tolerance, procedures listed below must be followed:

LINE-OF-ROAD RADIOS

1. Notify the user that his radio is operating beyond frequency tolerance.

2. Notify Chief Dispatcher of the violation, furnishing all available information, train number, engine and/or caboose number. The Dispatcher will notify user that the radio is in violation and is to be used for emergency transmissions only.

3. When a radio unit is found to be out of tolerance, the radio must be removed from service until repairs are complete. If necessary, notify Mechanical and/or Communications personnel at the next terminal to remove radio and ship to the nearest radio shop for repairs. Engine and/or caboose number must be shown on shipping tag of the unit when removed.

YARD RADIOS

1. Notify the user that his radio is operating beyond frequency tolerance.

2. Notify Yardmaster of the violation, furnishing all available information, including engine and/or caboose number. Yardmaster will notify user that the radio is in violation and is to be used for emergency transmission only.

3. Defective radio equipment must be promptly removed from service and sent to radio shop for repairs.

ALL OTHER RADIO UNITS

1. Notify the user of the radio that it is out of tolerance. The user must be instructed to discontinue use except for emergency transmission. The defective unit must be brought to a radio shop as soon as possible for repairs.

SECTION I - GENERAL

U. Volume Level Setting: - Micor Universal 'T-Rack[1] Radio:

The following check, and if required adjustment, must be made on all Micox engine/caboose pool radios each time they come through the radio shops as a part of routine procedure:

1. After radio feas been checked following normal shop procedures, adjust volume control on control head to provide maximum audio.

2. Connect an AC voltmeter between ground and pin #17 on the 'Audio Board.•

3. Modulate the output of RF signal generator with a 1,000 Hz tone of sufficient magnitude to provide 3.5 KHx deviation.

4. Connect the 3.5 KHz modulated signal to the radio. Adjust generator output so that a good quieting signal is received- AC voltmeter should read 16 volts.

5. If required, adjust internal 'VOL' control located on 'Control Board* to obtain 16 volts on AC voltmeter.

V. All the information contained in the various Radio Instructions, supplements and future Radio Bulletins are to be a part of the permanent records at each radio repair point.

These instructions will be issued to all certified repairmen and supervisors and must be kept up to date with the most current instructions and bulletins. These instructions will be kept readily available for quick reference.

W. 36 Son In' Cancellation Policy:

Any radio on the; Korfolk Southern system whose assignment hasnot been uprisfced in RIS in the last 36 months will be cancelled and cftf!mnred to as a 'not active[1] radio. The radio will still appear in the RIS database for viewing only. The following procedure will be taken prior to the cancellation:

A) At 24 months; the radio number will be sent to the user department tot verify if the radio is still in use or not- Ifi the; radio is in use the radio's assignment will be npd.frt7fMf, in RIS.

B) At 20 Months; *M* the user department cannot verify that the radio iiss in use or if the radio has not been updated in EKEE then the purpose will be missing.

C) At 36 Months, if the user department still cannot verify that the radio is in use or if the radio has not been updated in HIS' then the status will be cancelled.

A radio is given, a cancelled status because the radio has been declared, destroyed, beyond economic repair and/or replaced, missing for over 6 months, stolen and gone for over 12 months, oar the assignment has not been updated in the last 36 months-

If a radio shows lip in a shop that has a status other than active notify the Senior Communications Engineer's Office and the radio will be placed back as active status if it is a good unit.

Director of Engineering
Communications Department

Atlanta, Georgia
File: 19-000B

DRAWING NUMBER	TITLE
RD 100	INDEX - 100 GROUP
RD 101	RADIO SHOP CODES
RD 102	RADIO EXAMINATION FORM
RD 103	MOBILE RADIO TRANSFER LOCATIONS
SRS 80	ADDITIONS RETIREMENT, REPLACEMENT OR TRANSFER OF RADIOS

MAD/O SHOP CODES

SHOP CODE	NOTE	LOCATION	OLD SHOP CODE
ANOV		ANDOVER. VA	AP
AOFf^	1.	ATLANTA OFFICE	GM
ASMV		ASHEVILLE. NC	AS
ATUC		H4MAN YD (ATLANTA), GA	AT
~~nqg_~~		KLEVUE, OH	BE
BLFD		BLUEFIELD, WV	BL
BMHM		NORRIS YD (B'HAM), AL	BH
BREW		BREWSTER.OH	BX
CG	2:	COMPUTER GENERATED	CG
CHAR	*	AIRLINE (CHARLOTT>. NC	CH
CHGA^		DEBUTTS YD (CHATT>. NC	CT
CHCCT		CHICAGO.IL	CI
CINC	*	GEST ST YD (CIN), OH	2Z
CLEV	*	CLEVELAND, OH	CL
COLA		ANDREWS YD (COLUMBIA), SC	CB
CONN		CONNEAUT, OH	CN
DECA		DECATUR, IL	DE
DETR		DETROIT. MI	DT
FTWF		FORT WAYNE. IN	FW
JACK	*	JACKSONVILLE. FL	—
RACE		KANSAS CITY. MO	KC
KN0X		SEVIER YD (KNOX), TN	SE
LMIS	∃	MASTER MECHANIC	MM
LSVU	*	LOUISVILLE, KY	LV
LYBG	*	LYNCHBURG. VA	—
MACN		BROSNAN YD (MACON), GA	MN
MNSE		MUNCIE.IN	MU
MOBR	*	MOBERLY. MO	MO
NORF	*	NORFOLK, VA	NK
NQRL	*	OLIVER YD <N.O->. LA	NO
PORT		PORTSMOUTH, OH	PO
RALE	*	RALEIGH, NC	RA
ROKE		ROANOKE,VA	RO
ROOK	*	ROOK (PITTSBURGH), PA	RK
SAVK	*	DILLARD YD (SAVANNAH), GA	SV
SHEF		SHEFFIELD YD. AL	SH
SPNC		SPENCER YD. NC	SR
STLO		ST LOUIS, MO	SL
WMSN		WILLIAMSON. WV	WI

•fc - **SHOPS ARE NOT ALWAYS AVAILABLE** TO WORK LINE-OF-ROAD RADIO EQUIPMENT.

L - **ATLANTA OFFICE COOE WILL** DESIGNATE INPUT MADE BY ATLANTA OFFICE PERSONEL.

Z. - **COMPUTER GENERATED** CODE WILL INOICATE PROGRAMED ENTRY.

X - **WILL INDICATE INPUT FROM** LOCOMOTIVE MAINTENANCE PROGRAM.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMEM?		
INS^CTTXW: POINT SHOP CODES	ENGINEER* A.F.C.	APPROVED: D.E.B.	DRAWING ML RO 101
	DRAWN: R.B.D.	DATE: 7-15-8S	

RADIO EXAMINATION FORM

DATE _____ USER DEPARTMENT _____

RADIO NUMBER _____ RADIO SHOP _____

SERIAL NUMBER _____

THIS **RADIO SHm©** BE RETIRED. IT CANNOT BE ECONOMICALLY

REPAIRED BECAUSE _____

_____

_____

_____

_____

_____

ESTIMATED COST TO REPAIR $ _____

SIGNED _____
(TELEPHONE MAINTAINER)

SIGNED _____
(COMMUNICATIONS SUPERVISOR)

RECOMMENDED _____
(SUPERINTENDENT COMMUNICATIONS)

CC: GENERAL SUPERVISOR

I CONCUR WITH THIS RECOMMENDATION.

_____
(GENERAL SUPERINTENDENT COMMUNICATIONS)

REPLACE **WITH** _____

CHARGE **TO** _____

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMEKF		
RADIO EXAMINATION FORM	ENGINEER: A.F.C.	APPROVED: D.E.B.	ORAWING ML RD 102
	DRAWN: R.B.D.	DATEi 7-15-89	

THIS IS A- LIST5 OF LOCATIONS WHERE THE COMMUICATIONS DEPARTMENT CAN HANDLE TRANSFERS OF MOBILE RADIOS.

AI:ASAMA
ANNISTON
BIRMINGHAM
FT..FAYNE
HUNT'SVILLE
SELMA
S*+E3*FIELD

GUHHWGIA
ALffiftNY
ATLANTA
COLUMBUS
HELENA
MACDK
M-ILLEN
ROME
S3WANAH
VALDOSTA

ILJLJNOIS
BELLEVILLE
CHICAGO

INQHANA
FT. WAYNE
MUNCIE
PRINCETON

KSSTUCKY
DANVILLE
LOUISVILLE
SOMERSET

LOUISIANA
NEW. ORLEANS

WOEHIGAN
DETROIT

MISSISSIPPI
HATTIESBURG
MERIDIAN

MISSOURI
KANSAS CITY
MOBERLY
ST. LOUIS

NORTH CAROLINA
ASHEVILLE
CHARLOTTE
GOLDSBORRO
GREENSBORO
KINSTON
RALEIGH
SPENCER YARD

OHIO
BELLEVUE
BREWSTER
CINCINNATI
CLEVELAND
CONNEAUT
DECATUR
PORTSMOUTH

PENNSYLVANIA
ROOK

SOUTH CAROLINA
COLUMBIA
FORREST
GREENVILLE
SPARTANBURG

TENNESSEE
KNOXVILLE
CHATTANOOGA
MEMPHIS
OAKDALE

VIRGINIA
ANDOVER
CHARLOTTESVILLE
LYNCHBURG
MANASSAS
NORFOLK
ROANOKE

WEST VIRGINIA
BLUEFIELD
WILLIAMSON

=sqHf^ NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
MOBILE RAHI0D TRANSFER LOCATIONS	ENGINEER: A.F.C.	APPROVED: D.E.B.	DRAWING NO. RD 103
	DRAWN: R.B.D.	DATEs 7-15-89	

NORFOLK SOUTHERN

PASS	[PAGES	NUMBER	APPUESTO
1	0 5	80	NS NW SR

CORPORATE PROCEDURE

SUPERSEDED OATS	EFFECTIVE OATE
06A6/86	04/10/89

suaacr

ADDITION, RETIREMENT, REPLACEMENT OR TRANSFER OF RADIOS

GENERAL

This procedure establishes the proper system **for** acquiring **radio equipment and reporting all additions,** replacements, **retirements and transfers in the capital** accounts. This **includes:**

1. **Radios installed in equipment, such as** locomotives, **cabooses, automobiles and trucks, which** are capitalized in **same ICC account as equipment on** which installed. This **category includes radios capitalized** in ICC Account 58 as **spare parts for units installed** in **privately owned** vehicles **of Company officers.**

2. **Portable radios (Handy-Talkies) which** are capitalized in **Road Property Account.**

3. **Base station radios used** in **yards** and terminals and at **wayside stations.**

4. **Radios used on roadway machines** either **on** or off track.

5. **Spare radios - capitalized** in same ICC account as **equipment on which they are to be** used.

6. **Radar speedmeters - portable or at** fixed locations.

WOTS: Kadlo |«reht<*i to ba lacludad as Una ltirat la tb>a Capital Imarovatnants l«<f*t must ba approvad •y t»a Capital (xf«asltmr»« Commlttaa and th« C&laf KxacutVva Officer. Any proposals not listed as Capital Xmprovamaat Budyat Una ltams will ba faadad from Cattfory SO - Othar ltams.

L ADDITIONS. RETIREMENTS AND REPLACEMENTS

RESPONSIBLE DEPARTMENT OFFICER

101. Prepare 11071-series forms requesting authority to obtain **new radios, or retire radios, or** retire and replace radios **missing more than thirty (30) months.**

Include radios for new work equipment and show **equipment identification numbers on which** the radio will **be installed. Charge them to the** AFE covering the **purchase of the new equipment.**

Indicates change or addition.

NORFOLK SOUTHERN

W W 6 I PAGES	NUMBER	APPUESTD
2 ?5	80	MS - NW SR

SUPEHSEDH) OWE	EFFECTIVE OATE
06/16/86	04/10/89

CORPORATE PROCEDURE

SUBJECT

ADDITION, RETIRO®rr, HfflHLACEMENT OR TRANSFER OF RADIOS

RESPONSIBLE DEPARTMENT OFFICER (eont'd)

Prepare separate 11071-series forms for radios to be installed in new vehicles requested through Fleet Arimiinslration.

For radios to be retired include radio numbers, types and models, acquisition AFE or cost center code (if known), aril any equipment or vehicle numbers from which removed (except for Handy-Talkies).

E&temilfc Handy-Talkies as to assignment or location.

Forward forms to Director Engineering, Communications Department.

Note: Alhenr« forms •«• 1ST requir«4 for th* following-

- Ttonaoface existing radio units which have been lost or stolen.
- For a single additional (not replaced) radio unit costing less titan $2,000 or the current ICC minimum amount aQfdunble* to additions to property. Approval by the Dftflartmental Assistant Vice President is required.

Prequire memo requests for the above Hems and forward to the Director Engineering, Communications Department. These items will be charged to the user's onttocater as an expense item.

- TS» ntplace an existing radio unit determined by Ghimramications Department to be damaged beyond eoonamical repair with a service life less than age 'intiizsAed below, charge will be made to the user's cost csnnnv. If the service life exceeds the radio age shown briàw^ arrange with Communications Department to cegütse at Communications expense.

Radio Type	Age
BmdiService - Portable	4 Yrs.
ffiaadi Service - Portable	10 Yrs.
n»»iwiii Issue - Portable	12 Yrs.
Engine & Caboose	10 Yrs.
EEnadMay Machines	8 Yrs.
EUghway Vehicles	12 Yrs.
Hand Held Radars	10 Yrs.

NORFOLK SOUTHERN

mas	PAGES	NUMBEH	APPUESTO
3	° F 5	80	NS NW SR

CORPORATE PROCEDURE

SUPERSEDED OATE	EFFECTIVE DATE
06/16/86	04/10/89

SUBJECT

ADDITION, RETIREMEHT, HHHLACEMENT OR TRANSFER OF RADIOS

RESPONSIBLE DEPARTMENT OFFICER (confd)		**Connnuaieations Department, Atlanta, will be responsible fin* preparing AFE requests to replace equipment due to obsfritesnnce or technological change in periodically jjtanmgl replacement programs, within the constraints of aitewe ages, for all departments. Communications will furnish the user departments list of radio units to be osgfenBBA under these programs.**
DIRECTOR, ENGINEERING COMMUNICATIONS DEPARTMENT	102.	**Add east information for new or retired radios to Form HOTll-series and forward to Manager, Capital Accounting.**
MANAGER, CAPITAL ACCOUNTING	103L	**Process Form 11071. If approved, forward forms to Managsr, Financial Analysis;**
MANAGER, FINANCIAL ANALYSIS	MML	**Conduct economic analysis of proposal and, if approved, forward forms to Departmental Vice President for signature.**
DEPARTMENTAL VICE PRESIDENT	105.	**Fatwacd approved forms as follows:** • **Hinder $25,000 - To Manager, Financial Analysis for assignment of AFE number.** * **. $25,000 and above - To, in order, appropriate Executive Vice President, NS Chairman, President & CEO and Manager, Financial Analysis.**
MANAGER, FINANCIAL ANALYSIS	106.	**Assign AFE number to approved project. Advise Director - Engineering, Communications Department, Departmental Vice President, Vice President, Material Management, and Manager, Capital Accounting of AFE number that has been assigned to project. Forward original Form 11071 to Manager, Capital Accounting.**

NORFOLK SOUTHERN

PAGS	PAGES	NUMBER	APPLIES TO
. f .		80	NS NW SR
SUPERSEDED OATE		6FFSCTIVE OATg	
06A6/86		04/10/89	

CORPORATE PROCEDURE

SUBJECT

ADDITION, RETIREMENT, REPLACEMENT OR TRANSFER OF RADIOS

DIRECTOR, ENGINEERING COMMUNICATIONS DEPARTMENT

lOt. Prepare purchase requisition for new radio equipment and fbcnward to Material Management (MM) Department.

10t> ContanfeMM Department to obtain sale order for disposal o£an$aai*afeable radios.

1GH Eucniatti MM Department delivery papers and identification nunbeosaf all radios disposed of against sale order.

MATERIAL MANAGEMENT DEPARTMENT

11(1. Receive purchase requisitions for new radio equipment and prepare purchase orders to cover.

11L. Pmgaoe billing for all salvageable radios sold.

112. Etmriatti eapy of bills covering sale of salvaged radios to Communications Department and Capital Accounting with copy of new equipment records.

COMMUNICATIONS DEPARTMENT

11X Receive all new radio equipment and perform FCC processing, furnishing Capital Accounting with copy of new equipment records.

114. ftepoct disposition of all retired radio equipment to Capita* Accounting.

115. BemoNe retired, non-useable radio equipment from active caaDjascr-generated Radio Records.

TRANSFERS

RESPONSIBLE DEPARTMENT OFFICER

20L In planning vehicle and work equipment replacements, consult Communications Department to establish reusability of radio or recommendation for replacement if necessary.

202. Whes radio is reusable, prepare "Radio Transfer Request," Form 11246, for authority to transfer radio from one unit of flqnipment to another. Identify requests by equipment matter, radio set number, and the equipment on which n i l is to be reinstalled. Forward request to Assistant Ifiee President - Communications Department for approval.

NS NORFOLK SOUTHERN

FftGC	PAGES	NUMBER	APPUESTO
5	F 5	80	NS NW SR

CORPORATE PROCEDURE

SUPERSEDED OATE	EFFECTIVE DATE
06/16/86	04/10/89

SUBJECT

ADDITION, RETIREMENT, EMPLACEMENT OR TRANSFER OF RADIOS

ASSBTAJmBCE PRESIDENT COMMUIPCAIIIQNS DEPAinKEST for	**203. Forward approved** transfer authority to originating **department** and General Superintendent Communications **initiating transfers.**
RESPONSIBLE DEPARTMENT OFFICER	**204. Coordinate** with Communications Department for removal **aad reinstallation as requested.**

>OTI: C»——ntottom Kalntalatti iti Instructed not to ttsssfcc t>4loi without approved Form 1124S.

This Procedure has been Approved by:

Mr. E. ft. Burwell, Executive Vice President, Operations
Mr. J. S. .Shannon, Executive Vice President, Law
Mr. J. R. Torbyfill, Executive Vice President, Finance
Mr. D. H. Watts, Executive Vice President, Marketing

Authorized For Publication

Executive Vice President, Administration

Section 2

Forms/RIS

RADIO INFORMATION SYSTEM
FUNCTION AP ASSIGN / UPDATE SECURITY PASSWORDS

USER INITIALS	PASSWORD	AUTHORIZED FUNCTIONS	ROAD CODE	LAST CHANGE DATE	ACTI COD
kam	kaml	as cc ii mi mr ip	s		c
jrg	jrgl	as cc ii mi mr ip	s		c

COMMAND
MESSAGE UPDATE RECORDS AND ENTER

V_>Date: 11/11/99 Time: 11:24:57 AM

SECTION II - FORMS AND RIS

T&is revision afc Badio Instructions Section II supersedes and cancels any previous Radio Instructions for Section II.

A. <u>≤qB5MH4M^I,</u>

E&rm 699, primarily designed for assignment records EWTTposes, will be attached by Radio Shops for each F.C.C. inspected, serviced! and/or repaired radio where final assignment is not known by the Radio Shop. It will be comgieted and mailed to the Atlanta office by the person installing the radio at its ultimate location.

Ml Conmunications personnel who come in contact with Httathani.cal Departmeant, MofW, or other personnel who may *IJBB* responsible rōar the proper completion of Form 699, sfcfanicld make eveary effort to properly instruct such pnrnqmnnel in the proper procedure for completion and fbrscarding of the EdarHi 699. The importance of the proper disposition of the Form 699 should be emphasized.

Krnir 698 is a form which Radio Shops keep to help prevent 'human, failure' in preparation of Form 699 and Radio Information System (RIS) database update for individual unites of radio equipment processed through a shop.

TKe? proper pool code symbol must be entered on the Form 69® and RIS database. On Form 699, the symbol will be entered in the lower right corner of the card form. The syndtol must be clearly printed. Proper placement of pool cad*E»g is illustrated in Drawing RD-204 attached to this section. For the proper location of the pool code in RIS, see paragraph F on RIS.

F.C.C. inspection data for all radio transmitters should give the frequency authorized for each channel; any af2r-frequency deviation from this authorized frequency should be adjusted to ± 0 Hz. The modulation deviation should be checked and adjusted, if required, to provide not more than ± 5 KHz modulation for each channel.

Radios which have not had an assignment update in the last 36 months will be cancelled in the RIS database (For more detail see Section I part V). All cancelled radios will be in the database for viewing only. If such a radio shows up in a shop and needs to be reinstated notify the Senior Conmunications Engineer's Office for pnaper handling.

Frequency stability required by the F.C.C. Regulations (90.213) is as follows:

			Fixed & Base Stations	Mobile Under 2W	Mobile Over 2W
50	-	450 MHz	0.00050 %	0.0050 %	0.0005 %
450	-	512 MHz	0.00025 %	0.0005 %	0.0005 %
806	-	866 MHz	0.00015 %	0.00025 %	0.00025 %

Although F.C.C. Regulations allow greater off-frequency operation of low-power mobile VHF transmitters, the railroad standard for low-power VHF units will be the same as for high-power units, 0.0005 %.

B. EQUIPMENT OUT OF SERVICE FOR REPAIRS

A radio that is in a shop for repairs, which for some reason, such as necessity to order parts which are not in stock or cannot be borrowed from another shop - will not be worked immediately and should have the assignment updated in RIS. The assignment should show reason for holding radio in the space provided for comments, such as parts ordered, extensive damage, intermittent trouble, holding to retire, etc.

C. INITIAL REPORTS ON NEW EQUIPMENT

When a new radio is ordered, the radio will be assigned a railroad identification (RRID) and will be entered into RIS by the Atlanta office. All information that is known at that time will be entered (AFE, cost center, purchase order, model number, frequencies, purpose, etc.). The supervisor of the shop that will be receiving the radio will get a copy of the requisition with the RRID on it. It is very important that the shop receiving the radio for the engraving and initial inspection enters all information known about the radio that has not already been entered into RIS (serial number, initial assignment, initial technician's initials, location received, date received, etc.). This must be done on the 'CC screen. Verification of all information input by the shop or Atlanta should be closely checked and corrected if necessary. Maintenance will be reported on the 'MI' screen.

SECTION II - FORMS AND RIS

When a new piece of radio equipment is plated, an initial assignment must be made on the 'MI' screen in RIS. This is also required with any modification which changes the frequency, model number or F.C.C. type acceptance. Also the 'CC screen should be checked to verify that all information is correct.

When a new radio is received by a shop, the technician that is performing the initial inspection will check the radio to insure the proper channels are installed. Programmable radios which have prom codes for channel designation must be checked for the proper frequencies and to insure that the display is exactly as the prom code list states.

All markings for radios will strictly follow the guidelines of the drawings in Section IV of this manual. If for any reason the requirements cannot be followed or such information does not exist, the Senior Communications Engineer's Office must be notified, and the situation will be handled on an individual basis.

It is the responsibility of the shop receiving the radio to notify the user department when the radio is ready to be put in service.

D. FORM 699

Form 699 is intended for use in reporting the ultimate assignment of radio equipment after F.C.C. inspection, service and/or repair by a Radio Shop when the shop does not have this information.

Form 699, which has the general appearance of a large shipping tag, is stocked by the Stationer, Roanoke, Virginia, and comes in bundles of 50 cards. Do not order over a 60 day supply at any time. Drawing RD-204 attached to this section illustrates the Form 699.

SECTION II - FORMS AND RIS

Use of Form 699 is as follows:

1. From 699 must be attached to all radio equipment bearing a RRID number when such equipment is shipped to outlying points for installation.

2. Form 699 will normally be attached to all radio equipment on hand in radio shops as 'spares.'

3. At the time Form 699 is attached to a unit, the RRID number of the unit must be entered in the proper space on the form by Radio Shop personnel. For instance, if Form 699 is attached to base station C-2194, enter C2194 after 'RADIO EQUIPMENT NUMBER.' Also, the proper pool code symbol must be placed on the card.

4. The person placing a unit in service must complete the form by entering information as to where the unit was installed and the date when installed. The postcard portion of the Form 699 is then detached and mailed to Communications Department, Atlanta, Ga., 30303. For instance, if a radio is installed on locomotive 6032 on January 5, 1989, at Spencer, NC, the person making the installation should enter 6032 after 'LOCOMOTIVE NUMBER,' January 5, 1989 after 'DATE IN SERVICE' and SPNC after 'INSTALLED AT.' The abbreviation for the city can be found in the Appendix.

5. Radio Shops should normally report transfer or assignment of equipment on 'AS' Screen in RIS, or if the radio has been worked on, it can be reassigned on the 'MI' screen. The reporting of the F.C.C. inspection, service and/or repairs to equipment will be done on the 'MI' screen. If it is positively known that a piece of equipment is going to be immediately placed in service and the location is known, the assignment information would be entered in RIS and no Form 699 prepared for the unit.

6. If a piece of equipment is shipped to an outlying pointy RIS assignment should show point to which equipment was shipped. Form 699 must be attached to the equipment to be completed by the installer at the outlying point. If the installer has access to RIS, he may enter the information through the 'AS' screen in lieu of sending in the Form 699.

7. Note that WHO mails the Form 699 to the Atlanta office is relatively unimportant. The important fact to keep in mind is that Form 699 MUST be mailed, or entered into RIS. Therefore, as pointed out before, every effort must be made to properly indoctrinate all personnel involved with installation of radio equipment as to the importance of the Form 699 information being documented. Communications Department personnel who detect constant failure on the part of a particular location, or person, to properly complete Form 699 should report the matter to his immediate supervisor for handling.

E. FORM 698

Form 698 is a Radio Shop form which was prepared to help prevent 'human failure[1] in the input of RIS 699 for individual units of radio equipment processed through a Radio Shop. A sample form is attached to this section and should be completed as follows:

1. A separate sheet must be kept for each category of radio: such as mobile, portable, engine, etc.

   Pages should be numbered consecutively in each category and maintained as a permanent record of sets worked.

2. Instruction for completing, by column, is as follows:

NOTE 1: Columns 1 - 4 must be completed by person receiving radio into shop.

COLUMN NUMBER INSTRUCTIONS

Column No.

1. Enter the radio set RRID number of each and every radio which comes into the shop, regardless of reason or source. The set number MUST-be taken from the RRID plate or engraving.

2. Enter date radio is received in shop. Month and day will suffice except for the first entry on each page, which should include the year. If the year date changes before completion of a page, the correct year should be indicated in each case. You may ditto in this column during the entire 24 hours covering a particular day's receipts.

SECTION II - FORMS AND RIS

(BLUMS KUMBER INSTRUCTIONS

COLUMN NO.

3. Initials of person receiving radio into shop. DO NOT ditto in this column.

4. Verify that ttfte external engraving or marking (such as ID plate?)) of the radio ID agrees with the RIS database. Xf the engraved number is illegible, have the radio engraved so that it is legible and check (X) in this ccESIusan. Do not ditto.

NOTE 2: Columns S ~ 7 are to be completed by the maintainer who performs the actual work on the radio

5. Initials oft maintainer who serviced radio set. Do not ditto.

6. Check if Farm? 699 was filled out.

7. Initials afc tie maintainer who updated the assignment and/oir nTf*t[illegible] in RIS.

NOTE 3: Columns 8 - 9 are to filled out when the radio leaves the shop.

8. Date (month and day) to be entered that radio leaves the shop~ All radios in the shop should be so secured that they cannot be removed from the shop without being; checked out by responsible personnel.

9. Show disposition of radio, signature of person receiving radio, or shipping information and initials of employee woo released the radio.

NOTE 4: If a radio must be held in a shop awaiting parts, or if radio requires extensive repairs, an 'Out of Service' report should be made in RIS. On the 'AS' screen in the current assignment comment section, put reason for the delay, i.e. 'awaiting parts,' 'extensive repairs,' 'awaiting retirement,' etc. When the radio is removed from the 'repair shelf' for final servicing, it should be reentered in column No. 1, etc., as though it was just received into the shop in normal manner.

SECTION m - FORMS AND RIS

RADIO ISFO^IATION SYSTEM (RIS)

The purpose of tHie Radio Information System is to maintain up-to-date pertinent information for each radio owned by 'Norfolk. Southern' and its subsidiaries.

The above is accomplished by utilizing an on-line, real-time computer system which will be referred to as RIS. Various function-codes are used to submit data to the RIS. For eacht function-code there is a screen which is displayed on the user's CRT for entering data for that particular function.

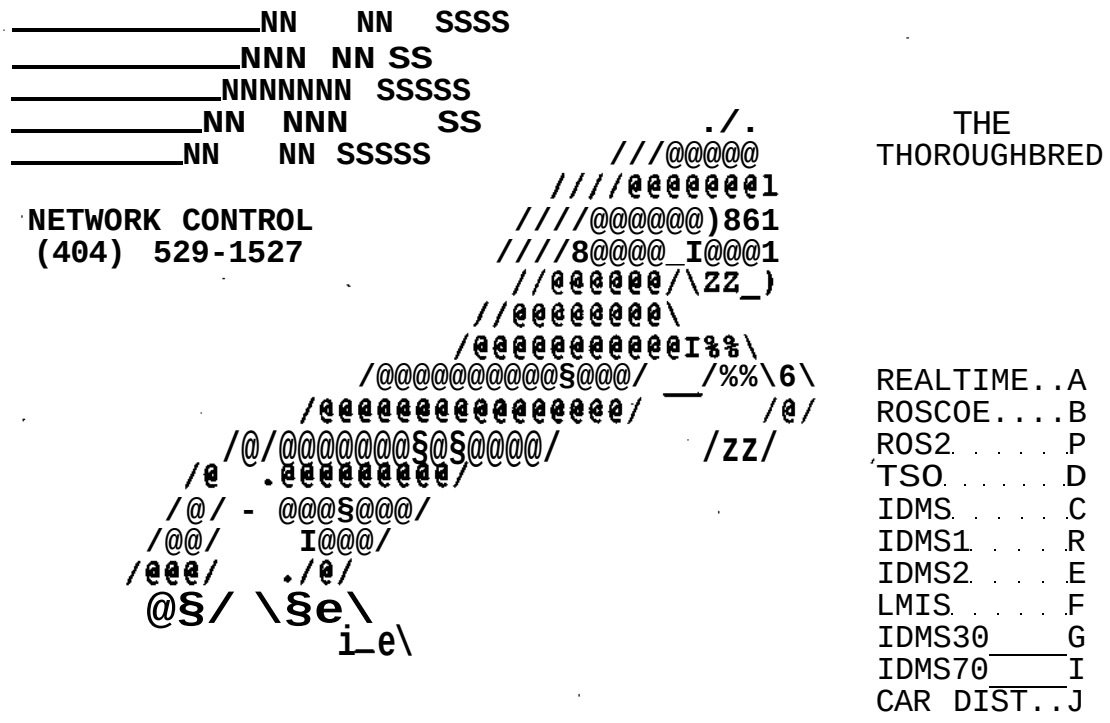
Authorization of personnel that may use the RIS is controlled by the Senior Communications Engineer's Office in Atlanta. Hot all authorized users may use all function-codes. Authorization for use of functions by each user is also controlled by the Atlanta office.

When using the mainframe from a PC the "ENTER' key refered to in this book is the 'CTRL' key, two keys to the right of the space bar. Also on the PC the 'ENTER' key next to number key pad on the far right of the keyboard can be used.

SECTION II - FORMS AND RIS

CALLING UP THE SYSTEM

1. Get the 'Network Control' screen on the CRT 'The Thoroughbred.'



ENTER SELECTION:

---

2. Select the 'IDMS2' system which is selection 'E'. Key 'E' in the selection space. Hit enter or Ctrl.

SECTION It - FORMS AND RIS

3. Tgft△ **message 'fflKEEffi NEXT** TASK CODE' will be displayed on **tfie screen.** **Key** in the word **• SIGNON.'** Hit enter or CtT.!fC.-

VUl ENTER NEXT TASK CODE:
SIGNON

4». TSaw should hasre> a screen that asks for your 'USER **III,"** 'PASSWORD' and 'MESSAGE.' Your USER ID is 'EN[1] + **'your** initials.' Your first 'PASSWORD' is •ENGROUP'. Afibsir entering your USER ID, HIT 'TAB', this will move your cursor to the 'PASSWORD' space.

IDMSEC2 - ATLANTA

USER ID _____
B&SSWORD
HEW PASSWORD

Afbec the first time you sign on using 'ENGROUP[1], you wiVE get the message that your password has expired; you mus3r enter your new password. If you should forget your new: password or get a message that you are locked out, you, must contact Senior Communications Engineer's Office in Atlanta (529-1254> to assist you. This first password has a maximum length of eight (8) alpha-numeric characters but can be less.

HCHEE This is the first of two (2) passwords you will need; to enter this program. Both passwords are independent of each other but can be the same. The second password is explained in step 6.

5. The message 'ENTER NEXT TASK CODE* will be displayed on the screem. Key in the word RIS. Hit Enter.

IDMS VLlL ATLANTA USER JFK SIGNED ON LTERM LH#23R
Vll EttXEK NEXT CODE:
RIS

6. You sftorold now have a screen that displays:

'RADIO INFORMATION SYSTEM'

INITTAIiS_____PASSWORD

MESSAGE _____

Enter youar initials and password. The first time you enter yauar password, it will be your initials + 1 **(EXAMPLE**t **JFK1).** Once you enter this password, it can, and should be, changed by calling up the 'IP' screen and typing yotaar own password. This password can be only four (4) alphanumeric characters. When you do change your password, please do not forget this word: you will not be able to enter the system without it. If your password is forgotten or does not work, please notify Atlanta Senior Communications Engineer's Office. Remember this password is independent of the first password you used, but you can stake then the same word.

7. A screen will display all functions available to the user. A second page may or may not be needed to display all the functions. If the second page is needed, use the PF1 key to display the second page.

```
                RAPIO INFORMATION SYSTEM                    PAGE 1
          FUNCTIONS AVAILABLE TO USER JFK

 RE/ASSIGN                                          AS  NNNNNNNN
 CHANGE RADIO CHARACTERISTICS                       CC  NNNNNNNN
 DISPLAY KEYWORDS                                   DK
 DISPLAYED QUED REQUESTS                            DQ
 INFORMATION INQUIRY BY RADIO-ID                    II  NNNNNNNN
 CHANGE INDIVIDUAL PASSWORD                         IP
 LIST ADDRESS FILE                                  LA  R
 REPORT MAINTENANCE/FCC INSPECTION                  MI  NNNNNNNN
 REPORT MAINTENANCE RECORD                          MR  NNNNNNNN
 ADD/CHANGE/DELETE PROM                             PC  CCCCCCCC
 SELECT RADIO FOR OFFLINE PRINTING                  SR  R

 ENTER COMMAND __ _____________
 MESSAGE ____________________________________________
```

LEGEND: NNNNNNNN = RADIO ID NUMBER
R = ROAD CODE (A=ALL, N=NS, S=SOU, W=NW)
I = LIST INSTRUCTIONS(A=ALL, N=NS, W=NW, B=BLANK-SCREEN)
GGG = GROUP CODES TO BE CHANGED OR DELETED, LEAVE BLANK FOR ADDING.
PPPP = NEW PASSWORD

NOTE: If you have any problem with the RIS that this manual does not cover, contact the Senior Communication Engineer's Office in Atlanta, GA.

If you are having problems with the RIS not accepting your input, refer to the 'HELP FUNCTION' on page 20 of this section.

SIGKOFF RIS

1. No matter what screen you are in, you can simply enter 'PF12' and this will take you to the previous screen. Continue to enter 'PF12' and you will see a screen that looks like this:

```
Vll ENTER NEXT TASK CODE
```

Enter the word •SIGNOFF' or 'BYE' and this will exit you to 'The THOROUGHBRED SCREEN. '

```
Vll ENTER NEXT TASK CODE
SIGNOFF or BXE
```

SECTION II - FORMS AND RIS

'AS' FUNCTION

REASSIGN RADIO OR CHANGE CURRENT STATUS

This screen will be used to report that the radio has been reassigned or to update an existing assignment.

After the radio ID has been entered, the current assignment and current status data will be displayed as information only. The displayed data may not be modified. The person's initials who made the last assignment change will show at the top of the screen under 'LAS.T ASGN GHANGE. ' Also, the shop he or she is assigned to will be on the same line under 'LOC'

If a new assignment is being reported, the following data must be entered and must be valid:

DATE
DEPT/POOL
LOCATION
USER INITIALS

Assigned date must not be more recent than the last maintenance date or the last F.C.C. inspection date.

If the current assignment is correct simply answer Y (YES) to the question 'IS CURRENT ASSIGNMENT CORRECT (Y or N)'. This will keep the assignment, replacing only the assignment date with todays date. If the question is answered N (NO) the data must be entered manually as described above.

Radios assigned to locomotives and cabooses.

If a radio is being assigned to a locomotive, the •DEPT/POOL' should be 'LOCO' and the user should be a valid locomotive number, preceded with an 'E.'
EXAMPLE = E3013.

If a radio is being assigned to a caboose or end-of-train device, the 'DEPT/POOL' should be 'CABS' and the 'USER' should be the caboose, or end of train device, number preceded with an 'X.'
EXAMPLE = X1234

***** END 'AS' FUNCTION *****

SECTION II - FORMS AND RIS

•CC FUNCTION

CHANGE RADIO CHARACTERISTICS

The 'CC function changes the existing radio characteristics and shows the radios initial asignment.

The following data can only be changed by this office:

ROAD code
REPLACES
MFG
TYPE
ROAD code
AFE/COSTCTR
PURCH ORD# and date
REQUISITION* and date

The following fields can have information put into the field only once, and this information can only be changed by this office after data has been entered:

LOC RCVD and date
INITIAL INSPECTION date
TECHNICIAN
INITIAL ASSIGNMENT date
COMMENTS
DIV
SERIAL*
LOCATION
DEPT/POOL
USER INIT
PURPOSE

If any information has been entered into any field in error and cannot be changed, notify Senior Communications Engineer's Office in Atlanta, and the information will be corrected. Fill in all fields with information.

If all changed data is valid (no errors), the message •DATA STORED' is displayed on the screen.

When the characteristics for a radio have been changed and the user wants to change another radio record, enter another 'RADIO-ID' on the current 'CC screen and hit 'ENTER.'

***** END 'CC FUNCTION *****

SECTION II - FORMS AND RIS

fDKf FUNCTION

DISPLAY KEYWORDS

Keywords are abbreviations for radio record fields to identify data for sorting and printouts.

The 'DK' function displays all keywords data. The data is displayed in two columns. The first column is a description of the keyword. The second column is the keyword. The data is in alphabetical order by the keyword description.

***** END «DK' FUNCTION *****

"Eg?* FUNCTION

DISMAY QUEB REQUESTS FOR PRINTING

The: "BO/ function; is a request to display for viewing or grinfcfiimg a listing of one users requests of sorted data. QnXjr short requests should be printed out to your local printer; longer requests should be sent to the high speed printer. After a request has been run, the results should first be viewed on the screen and then, if necessary, a printout can be made. The status of each request will be displayed at the bottom of the screen.

Requested jobs will stay on line for one week. After a one week period tbey will automatically be deleted. Requested jobs are designated by an 'R.'

Jobs which have been requested for printing are designated by a *'Q'* and will stay on the screen for viewing for two weeks. After two weeks they will automatically be erase.

***** END 'DQ' FUNCTION *****

•II' FUNCTION

INFORMATION INQUIRY

The 'II' function is a request to view the current characteristics for a radio and is for information only. No updating is done with this function.

'II' EtHSCTION (CONTINUED)

Anyone requesting information on radios can access the radio records by signing on 'IDMS2' and entering RIS. When RIS asks far initials and password, simply enter 'INQ.' in the space for the initials and hit 'ENTER.[1] This is an information inquiry request. You are able to enter radio numbers and view the radio records, but you are unable to a*frf,. change or delete any radio data. This is for information only.

To exit the 'II function,[1] hit the 'PF12' key. This should take you back to the 'ENTER NEXT TASK CODE' screen. To return to 'THE THOROUGHBRED[1] screen, you must now enter *BXK* or •SIGHOFF.'

***** EH© *IIf FUNCTION *****

•IP' FUNCTION

INDIVIDUAL PASSWORD CHANGE

The 'IP' function may be requested by a user to change his/her password. This function will not change another user's password.

A password is good for only 45 days.

After the 'IP' function is requested, the user will have a screen (which is self-explanatory) to change the password.

A valid password consists of four characters. The characters may be alphabetic, alphanumeric, or numeric. There is one exception - 'XXXX' may not be used as a password.-

***** END $I_{IP}I$ FUNCTION *****

ʳLA" FUNCTION

LIST ADDRESS

The *LA* function is used to display the report group code adtiBress file fox one road or all roads.

No updating is doae with this function. The displayed data is for information only.

Sequence of displayed data:

1. If the request is to display for one road only, the displayed data is by report group code.

2. If the request is to display for all roads, the displayed data is first by road, then by the report group within the code.

It is expected that at some date in the future each radio will be in a report group. The 'LA' function will display the person responsible for units in a particular report group. For example, if the Master Mechanic in Atlanta had his own report group, he could request a report of all the radios he is responsible for.

***** END tLAt FUNCTION *****

SECTION II - FORMS AND RIS

•MI' FUNCTION

MAINTENANCE/INSPECTION REPORTING

The 'MI' function is used to report radio maintenance and/or F.C.C. inspection and assignment.

As information only, the latest assignment, status, and maintenance reporting is displayed. The user signon information toward the top of the screen will show who made the last assignment change and the shop he or she was assigned to. The assigned frequencies are formatted on the screen with spaces to indicate which frequencies were checked and adjusted.

Data required

Maintenance/Inspection:

* MAINTENANCE date (if FCC date is entered this date will be automatically entered)
* FCC date (not required unless the radio is FCC inspected)
MODULATION (only if FCC inspected)
OUTPUT POWER (only if FCC inspected)
RECV. SENSITIVITY (only if FCC inspected)
COMMENTS
MAINT.. TIME

Reassignment of radio:

If the assignment is to stay the same, answer Y (YES) to the question 'IS CURRENT ASSIGNMENT CORRECT____'. If answered Y then the assignment will remain the same and the date will be updated. If answered N (NO) the following fields must be filled out:

DATE
DEPT/POOL
LOCATION
USER INIT

* If an FCC date is entered the maintenance date will be entered automatically by the computer since an FFC inspection is considered a maintenance. But, if you just put in a maintenance date this does not mean you have done an FCC inspection, so the date does not need to be put in the FCC date.

SECTION II - FORMS AND RIS

'MI' FUNCTION (CONTINUED)

MAINTENANCE/INSPECTION REPORTING

The following applies for radios assigned to a locomotive or caboose.

Radios currently assigned or being given a new assignment:

1. If the radio is being assigned to a locomotive, or the current assignment is being changed to a locomotive, the 'DEPT/POOL' should be 'LOCO' and the 'USER' should be the locomotive number preceded with an 'E.'
EXAMPLE = E3013.

2. If the radio is being assigned to a caboose, to an end-of-train device, or the current assignment is being changed to either, the 'DEPT/POOL' should be 'CABS' and the 'USER' should be the caboose or the end of-train-device number preceded with an •X'
EXAMPLE = X1234.

***** END 'MI' FUNCTION *****

"MR" FUNCTION

M&HSflHEMANCE RECORDS

The 'MR' function is used to display information indicating: what maintenance has been done to selected radios.

To get the maintenance history of a radio type on the command line 'MR' and the radio number requested.

Example:

COMMAND MR C4225

This will give you the maintenance history of radio •C4225* for the last 12 months. If there is more than one page, the next page can be viewed by hitting 'PF1' and the previous page 'PF2.'

If it is necessary to get a printout of all maintenance records on paper you can request it on the command line as follows:

COMMAND MR C4225 P

This will send a copy to the local printer, or you may do a screen print if you have a personal computer.

***** END 'MR' FUNCTION *****

SECTION II - FORMS AND RIS

'SR' FUNCTION

SELECT RADIO INFORMATION FOR OFF-LINE PRINTING

The 'SR' function is used to request select information from all radio records as described below.

The 'SR' screen displays instructions for selecting data to be viewed or sorted.

The data to be selected is requested by keywords. For each keyword there is a compare code and the variable data for the compare code.

Additional data may be displayed from each radio record by requesting the additional keyword.
Compare codes are:

'ET' = equal to
'GT' = greater than
'LT' = less than
'GL' = greater than and less than

The order in which the data will be sorted is requested in the 'SORT FIELDS.'

Fields to be displayed are requested in the 'PRINT FIELDS'

***** END 'SR' FUNCTION *****

***** HKI P FUNCTION *****

INFCHWRTIOir THAT CAN BE INPUT IN FIELDS

'CORRECT HUGflTiTQEBCED FIELDS' - This is a message at the bottom off the screen when you are adding or changing information *an* a screen and the input is not accepted. When you get this message and do not know what values can be input in that particular field, move the cursor to that field's input line and hit 'PF7.' There will be a screen showing the range of values that are acceptable for that field. If there is more than one screen of information, hit *PF1' to scroll down and 'PF2' to scroll up. To return to the original screen hit 'PF12.'

•NOT AK ACTIVE RADIO' - This message is given when a radio has a "cancelled[1] status. This means the radio has been removed frcso service or is missing. No information can be changed on a cancelled radio. If the radio has been located or needs to be put back in service for whatever reason, you will need to contact the Senior Communications Engineer's Office and have the status changed to 'active'.

SECTION II - FORMS AND RIS

GLOSSARY

AFE/COST CENTER[1] - The AFE or cost center the radio was purchased unriter. This number is normally inputted in Atlanta.

CALL SIGHS - Eiisft the F.CC. appointed call signs associated wiittfi* the radios' frequencies.

CHANNELS - Humfijer of channels on the radio.

COMMAND - Input the abbreviation of the function you need to view. Some abbreviations are on page 3.

CURRENT STATUS — Indicates the status of a radio. 'A' is active. "C is cancelled.

DEPT/POOL - Department ox pool code the radio is assigned to. Tonst can input only approved codes. Check pool code list if you do not know the proper code.

DIVISION - The division the radio is being used on or assigned to. You can input only approved codes. Check the division code list if you do not know the proper code.

FCC TYPE - The F.CC. code given to this type of radio.

FREQUENCY CHECK ADJUST - The space next to the frequency will either be 'C' or 'A.' 'C means the frequency was checked; an 'A' means the frequency was adjusted.

LOCATION - 1. Initial inspection and current inspection - the radio shop that inspected the radio. Only approved radio shop codes can be input here.

2. Initial assignment and current assignment- the location where the radio will be used. If the radio is a personal issue radio, put the city where the user's office is located. If the radio is used in a yard, put the city where the yard is located. Supplied is a list of 4 digit city codes to use. We must standardize these inputs, so use only approved codes. If a city is not on the list, use the nearest city or notify Atlanta of an addition.

SECTION II - FORMS AND RIS

GLOSSARY

MANUFACTURE! - Manufacturer of the radio.

MODEL - Manufacturer's model number.

MODULATION - The= tested modulation of the radio. Input must be in tite range of Q to 8. EXAMPLE 4.5.

OUTPUT POWER - Tfie power output of the radio in watts to the nearest whole number.

PREFIX - Place: an 'X' in this location when the radio is a red; division radio.

PRINT FIELDS - Listt keywords for all key fields to be printed.

PROM CODE - Bnfcear the prom code number associated with the freqjiency list on the radio. The prom code must be a number assigned by the Senior Communication Engineer's Office in Atlanta. If the channel configuration does not agree with any prom code on the list, then a new prom code must be assigned by Atlanta. If there are 10 or less frequencies and no pxora code exists, simply input each channel.

RADIO ID - Radio number given to radio by Senior Communications Engineer's Office in Atlanta. All radios will be in the RIS for your use. You will, not be allowed to input a new 'RADIO ID' or delete a radio. If a number you are trying to inpu* is not in the file, notify Atlanta. Retired radios will be indicated by 'C in the status cods.

RECEIVE CHS- If the radio does not have a prom code associated with it, list the channels individually. You have room for only 10 channels; therefore if there are more than 10 channels, you must input a prom code.

REPLACES - The number of the radio being replaced.

REQUISITION # - The requisition number the radio was purchased undjer. This number is normally inputted in Atlanta•

SECTION II - FORMS AND RIS

GLOSSARY

ROAD - **II for** Norfolk Southern Corp.
S **for** Southern Railway.
W **for** Norfolk and Western Railway.

SERIAL - **Manufacture's** serial number.

SORT FIELDS - **Allows** you to input how you want fields to be **sorted.**

STATUS CD - **Indicates** the status of a radio. 'A' is active, *C is cancelled. The status can only be changed by **the** Senior Communications Engineer's Office.

TECHNICIAN - **The** initials of the technician inspecting or **working** the radio.

TIMES SERV - **This** field is computer generated. It shows the **number** of times a radio has been worked on. One **field shows** the number of times in the last 12 **months and** the other shows how many times to date.

TRANSMIT CHS - If the radio does not have a prom code associated **with** it, list the channels individually. You only **háve** room for only 10 channels; therefore you must **input** a prom code.

TYPE - **Radio** type, such as: Motran, Motrac, Mitrek, **MT500**, MCX100, MCX1000, etc.

APPENDIX

The 'PURPOSE' field is used to identify the radio's use. This input should be only acceptable values so that sorting will be possible according to the radio's use. For example, if you requested a list of all base station (BASE) radios, it can be easily sorted because we have standardized the input for this field. The following list gives the acceptable values for the •PURPOSE' field:

IF THE PURPOSE IS:	ACCEPTABLE INPUT FOR PURPOSE IS:
Alarms	
(SAD)	SAD-ALM
(DED)	DED-ALM
(TSA)	TSA-ALM
(SCALE)	SCALE-ALM
(HBD)	HBD-ALM
Base station	BASE
Caboose	CABOOSE
Derrick	DERRICK
Portable division radio	PORT-DIV
End-of-train device	EOTD
Head-of-train device	HOTD
Locomotive line of road	LOCO
Locomotive yard use	LOCO-YD
Locomotive run through	LOCO-RT
LOCOTROL	LOCOTROL
Mobile (vehicle)	MOB-V
Office car	OFFCAR

APPENDIX

IF THE PURPOSE IS:	ACCEPTABLE INPUT FOR PURPOSE IS:
Portable personal issue	PORT-PI
Portable yard use	PORT-YD
Radar yards	RADAR-YD
Radar portable	RADAR-PORT
Repeater	
(Tx & Rec)	REPT-T&R
(Transmit)	REPT-TX
(Receiver)	REPT-REC
Roadway equipment	
(Machine)	MOB-M
(Vehicle)	MOB-V
(Portable)	PORT-PI

Enter the codes exactly the way they are on this page. Do not use any code other than the accepted values.

The following categories will be used in the 'STATUS'. The status will reflect this information and can only be changed by this office.

IF THE RADIO IS:	STATUS WILL BE:
Active	A
Canceled	C
Destroyed	D
Missing	M
Theft (Stolen)	T
Stored	S

SECTION II - FORMS AND RIS

APPENDIX

The 'USER' field is used to identify who is using the radio or who is directly responsible for the radio. The following values are acceptable values for the 'USER' field:

IF THE PURPOSE IS:	THEN THE USER IS:	ACCEPTABLE. INPUT FOR USER IS:
(Alarms) SAD-ALM DED-ALM TSA-ALM SCALE-ALM HBD-ALM	Initials of supervisor responsible.	JFN
BASE	Communications supervisor's initials	JFN
CABOOSE	Caboose #	X1234
DERRICK	Derrick #	903016
PORT-DIV	Division	DIV
EOTD	Number on box	X1234
HOTD	Head-of-train device	HOTD
LOCO	Locomotive #	E7065
LOCOTROL	Radio car #	E5942
MOB-V	Vehicle #	288101
OFFCAR	Office car #	NS21
PORT-PI	Person's initials	JFN
PORT-YD	Person's initials or Dept. Supervisor	JRS
* **RADAR-YD**	User's initials	JFN
RADAR-PI	**User's** initials	JFN

APPENDIX

IF THE PURPOSE IS:	THEN THE USER IS:	ACCEPTABLE INPUT FOR USER IS:
(Repeaters)		
KEFT-T&R	Communications	
REPT—TX	supervisor's initials	JFN
REPT-RBC		
(Roadway equip.)		
MOB-H	Machine #	TBC11
MOB-V	Vehicle #	388511
PORT-PI	User's initials	CXB

* If the radar is in the yard it the responsibility of the supervisor. Use his initials.

If this list does not sufficiently cover all uses of radios discuss with Senior Engineers Office in Atlanta so that standards can be maintained.

Director of Engineering
Coinnunications Department

Atlanta, Georgia
File: 19-000B

APPENDIX

LOCATION SORTED ON ABBREVAITION

ABIL	ABILENE	VA
ABIN	ABINGDON	VA
ADNA	ADENA	OH
ADRN	ADRIAN	MI
ADSN	ANDERSON	SC
AHUD	ASHLEY HUDSON	IN
AKEN	AIKEN	SC
AKON	AKRON	OH
ALBI	ALBIA	IA
ALBN	ALBANY	NY
ALBO	ALBION	IL
ALEX	ALEXANDRIA	AL
ALLA	ATTALLA	AL
ALTA	ALTAVISTA	VA
ALTN	ALTON	IL
ALTO	ALTO	GA
ALVO	ALVORDTON	OH
ALXC	ALEXANDER CITY	AL
ALXR	ALEXANDER	IL
AMCS	AMERICUS	GA
AMIG	AMIGO	WV
ANAR	ANN ARBOR	MI
ANDR	ANDREWS	IN
ANDV	ANDOVER	VA
ANGO	ANGOLA	NY
ANST	ANNISTON	AL
ANTW	ANTWERP	OH
APPA	APPALACHIA	VA
APX	APPOMATTOX	VA
ARGN	ARGENTA	IL
ARLT	ARLINGTON	VA
AROS	ARGOS	IN
ASBN	ASHBURN	IL
ASHD	ASHLAND	OH
ASHL	ASHLEY	IN
ASHT	ASHTABULA	OH
ASHV	ASHEVILLE	NC
ASTL	AUSTELL	GA
ATIC	ATTICA	IN
ATLG	ATLANTA	GA
ATNS	ATHENS	TN
AUGA	AUGUSTA	GA
AUVL	AUVILLE	WV
AVEA	AVELLA	PA
AVRY	AVERY	OH

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON ABBREVAITION

AZAL	A7.Ar.Thk	MI
BADN	BADIH	NC
BALY	BAILE3F	NC
BANN	wasxm	OH
BARY	BARSZ	IL
BAST	BSSSEHT	VA
BATV	BATAVIA	OH
BAXL	BAXLEY	GA
BAYL	BAYLIS	IL
BECK	BECKLEY	WV
BECY	BEACH? CITY	OH
BEDF	BEDFORD	OH
BELE	BELLEVUE	OH
BELV	BELXESflLLE	MI
BENI	BRMIOHVILLK	VA
BERK	BERKLEY	MO
BESS	BESSEI	AL
BETH	BETHmT*	CT
BFLO	BUFFALO	NY
BILT	BILTMORE	NC
BKLN	BROOKLYN	IL
BKNL	BROOKNEAL	VA
BLAK	RT.AfrprSI.RV	OH
BLAS	wr.Alznp.j,v,	NY
BLCH	BLANCHARD	IA
BLFD	BLUEF1ELD	WV
BLFS	BLUFFS	IL
BLFT	BLUFFTON	IN
BLGP	BULLS GAP	TN
BLKS	BLACKSBURG	SC
BLKV	BLACKVILLE	SC
BLMD	BLUE MOUND	IL
BLMT	BLOOMINGTON	IL
BLNE	BLAINE	TN
BLSP	BELLSPRING	VA
BLST	BLUESTONE	WV
BLTM	BALTIMORE	MD
BLUR	BLUE RIDGE	VA
BMHM	BIRMINGHAM	AL
BMNT	BEMENT	IL
BMTN	BLACK MOUNTAIN	NC
BNTN	BEBTON	IN
BODY	BOOIH1P	IL

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON ABBREVAITION

BOWN	BOWEN	IL
BRBG	BRIDGEBORO	GA
BRBN	BRISBANE	IL
BREW	BREWSTER	OH
BRIS	BRISTOL	VA
BRMN	BREMEN	GA
BRNS	BRUNSIDE	KY
BROK	BLACK ROCK	NY
BRSN	BRONSON	TN
BRTN	BRUCETON	PA
BRUN	BRUNSWICK	MO
BRYS	BRYSON CITY	NC
BSST	BASE STATE TN	TN
BSTN	BOSTON	* MA
BTLR	BUTLER	IN
BTSB	BATESBURG	SC
BUBR	BUCHANAN BRANCH	WV
BUCH	BUCHANNAN	GA
BUCR	BUCK CREEK	IN
BUEC	BUECHEL	KY
BUFO	BUFORD	GA
BUJT	BURLINGTON JCT	MO
BUNV	BEUNA VISTA	VA
BURK	BURKEVILLE	VA
BURL	BURLINGTON	KY
BURS	BURSTALL	AL
BUSY	BUSSEY	IA
BVIL	BAILEYSVILLE	WV
BYVL	BERRYVILLE	VA
CALU	CALUMET	IL
CAMB	CAMPBELLSTOWN	KY
CAMP	CAMPUS	IL
CANT	CANTON	OH
CARB	CARBO	VA
CARG	CARNEGIE	PA
CARO	CAIRO	MO
CARR	CARROTHERS	OH
CARY	CAREY	OH
CBLF	COUNCIL BLUFF	IA
CECL	CECIL	OH
CENT	CENTRALIA	MO
CGOR	CERRO GORDO	IL

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON ABBREVAITION

CHAR	CHARLOTTE	NC
CHAT	CHATTAROY	WV
CHBG	CHRISTIANSBURG	VA
CHES	CHESTER	SC
CHGA	CHATTANOOGA	TN
CHGO	CHICAGO	IL
CHHL	CHURCHILL	TN
CHHT	CHARLESTON HEIGHT	SC
CHIL	CHILLICOTHE	MO
CHMP	CHAMPION	IL
CHPN	CHAPIN	IL
CHRG	CHICAGO RIDGE	IL
CHRN	COCHRAN	GA
CHSB	CHILDERSBURG	AL
CHTN	CHATTON	IL
CHTO	CHARLESTON	WV
CHTV	CHARLOTTESVILLE	VA
CHWN	CHOCOWINITY	NC
CHYV	CHENEYVILLE	IL
CINC	CINCINNATI	OH
CLAR	CLARE	OH
CLDL	CLOVERDALE	VA
CLEV	CLEVELAND	OH
CLHL	CLIFTON HILL	MO
CLIF	CLIFFORD	OH
CLMO	CLAYCOMO	MO
CLRK	CLARK	MO
CLRV	COLLIERVILLE	TN
CLSV	COLLINSVILLE	AL
CLTN	CLAYTON	IL
CLVY	CLINCH VALLEY	VA
CLYD	CLYDE	OH
CLYM	CLYMERS	IN
CMBL	CHAMBLEE	GA
CMRN	CAMERON RUN	VA
CNCP	CONCEPTION	MO
CNLY	CONLEY	GA
CNTN	CLINTON	TN
COEB	COEBURN	VA
COIN	COIN	IA
COLA	COLUMBIA	SC
COLS	COLUMBUS	OH
COLU	COLUMBIA	MO
CONE	CONE	MI
CONN	CONNEAUT	OH

APPENDIX

LOCATION SORTED ON ABBREVAITION

CONT	CONTINENTAL	OH
COOP	COOSA PINES	AL
CORD	CORDOVA	AL
CORI	CORINTH	MS
CORY	CORYTON	TN
COSV	CONNELLSVILLE	PA
CRDL	CORDELE	GA
CREW	CREWE	VA
CRNL	CORNELL	IL
CROK	CROCKER	IN
CRTH	CARTHAGE	IL
CRTN	CARROLLTON	MO
CRUM	CRUM	WV
CSHC	COSHOCTON	OH
CSPK	CHESAPEAKE	VA
CTLN	CATLIN	IL
CULL	CULLEN	VA
CULP	CULPEPPER	VA
CUPK	CUSTER PARK	IL
CVIL	CIRCLEVILLE	OH
CYGA	CAYUGA	IN
DALT	DALTON	GA
DARL	DARLINGTON	MO
DASY	DAISY	TN
DAVY	DAVY	WV
DAYT	DAYTON	TN
DECA	DECATUR	IL
DEFI	DEFIANCE	OH
DEHM	DEDHAM	MA
DELM	DE LORME	WV
DETR	DETROIT	MI
DEVN	DEVON	WV
DISM	DISMAL YARD	VA
DISP	DISPUTANTA	VA
DLFI	DELPHI	IN
DLPH	DELPHOS	OH
DLRA	DELRAY	MI
DLTA	DELTA	OH
DMOS	DES MOINES	IA
DNVI	DENVER	IL
DNVL	DANVILLE	KY
DORC	DORCHESTER	SC
DOVL	DOUGLASVILLE	GA
DRCK	DEERK CREEK	IL

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON ABBREVAITION

DRBB	EHJRHAM	NC
DRVL	EQRAVILLE	GA
DRYP	IDSy FORK	VA
DUCH	*MMP* CREEK	VA
DUKK	IDOMKIRK	NY
DULU	BOLUTH	GA
DUNR	EIUilREATH	IA
DVAL	DULLIONVALE	OH
DWIT	DEWITT	MO
DWSN	DAWSON	IL
ECKK	ECKMAN	WV
EDJC	EDWARDS JCT	IL
EDJS	EDWARDSVILLE	IL
EDNT	EBENTON	NC
EDOB	EDON	OH
EGST	EB6LEST0N	VA
ELIS	ELLISTON	VA
ELKN	ELKIN	NC
ELMI	ELMIRA	OH
ELMO	ELMORE	WV
ELVA	ELLAVILLE	GA
ELWD	ELWOOD	IN
EMPR	EMPORIA	VA
EMRG	EMORY GAP	TN
EMTN	EMINGTON	IL
ENGL	ENGLISH	IN
EPNT	EAST POINT	GA
ERIE	ERIE	PA
ESSE	ESSEX	IL
ESTL	EAST ST LOUIS	IL
ESWI	EAST SWITCH	IA
ETON	EATON	IN
ETWA	ETOWAH	AL
EUCL	EUCLID	OH
EVNS	EVANSVILLE	IN
EWAY	EAST WAYNE	IN
EXSP	EXCELSIOR SPRING	MO
FARM	FARM	WV
FGSN	FERGUSON	MO
FINL	FINDLEY	OH
FKFT	FRANKFORT	IN

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON ABBREVAITION

FLML	FALLS MILLS	VA
FLIP	FLAT TOP YARD	VA
FOOS	FOOSLAND	IL
FORA	FORAKEH	IN
FPRK	FOREST PARK	GA
FRFD	FAIRFIELD	IL
FRFU	FRANKLIN FURNACE	OH
FRMN	FREMONT	OH
FRMT	FAIRMONT	IL
FRNK	FRANKLIN	VA
FRNO	FRESNO	OH
FRSC	FRISCO	TN
FRST	FORREST	IL
FSTR	FOSTORIA	OH
FTER	FT ERIE	ON
FTGA	FORT GAY	WV
FTGR	FOUNTAIN GROVE	MO
FTPN	FORT PAYNE	AL
FTRL	FRONT ROYAL	VA
FTVL	FORT VALLEY	GA
FTWF	FORT WAYNE	IN
FUVA	FUQUAY-VARINA	NC
GADS	GADSDEN	AL
GAMB	GAMBRINUS	OH
GARC	GARDEN CITY	GA
GARY	GARY	IN
GATC	GATE CITY	VA
GDNV	GORDONSVILLE	VA
GDVW	GOODVIEW	VA
GETN	GEORGETOWN	OH
GICY	GIBSON CITY	IL
GILH	GILMORE	MO
GIRD	GIRGARD	PA
GLAL	GLENALUM	WV
GLAS	GLASGOW	VA
GLBT	GILBERT	WV
GLDN	GOLDEN	IL
GLDO	GOULD	OH
GLDS	GOLDSBORO	NC
GLHA	GLENHAYES	WV
GLSP	GLADE SPRING	VA
GLTN	GALLATIN	MO
GLWD	GLENWOOD	MO

APPENDIX

D3EATION SORTED ON ABBREVAITION

GNBY	GffiSEN BAY	WI
GNSV	GSOJESVILLE	GA
GNVL	GREENVILLE	TN
GNWD	GREENWOOD	SC
GOFD	GEKH3FIELD	IL
GOOD	*cscsanv.*	VA
GRAM	GK6HAM	NC
GRAP	GRAND RAPIDS	MI
GRAY	GRAY	GA
GRBL	GRAYBILL	IN
GBBO	GREENSBORO	NC
GRCY	GBSbtlTE CITY	IL
GSDB	GEHSDON	GA
GBD7	flBUMDY	VA
GBFB	Gtidlktln	GA
GRIG	GSIGGSSVILLE	IL
GRNV	GREENVILLE	SC
GRSP	GHEENSPRINGS	OH
GSTJf	GASTONIA	NC
GTOP	GEEENTOP	MO
HALS	HALLSVILLE	MO
HALV	HALEYVILLE	AL
HAMT	HAMILTON	VA
HAND	HA^D	MI
HART	HSSTMAN	IN
HATT	HffiTPIESBURG	MS
HAVY	HSHVEY	IA
HELN	HELENA	GA
HENR	HERRIETTA	MO
HEWT	HEWLETT	WV
HFCY	HftRFORD CITY	IN
HIGB	EUGBY	OH
HIHL	HIGH HILL	MO
HIPT	HIGH POINT	NC
HKRY	HICKORY	NC
HLMR	HELMER	IN
HLST	HOLSTON	TN
HLWY	HOLLOWAY	MI
HMND	HAMMOND	IN
HMRR	HQHRICK	IL
HNBG	HONTINGBURG	IN
HNBL	HANNIBAL	MO

SECTION U -• FORMS AND RIS

APPENDIX

EOCATHOS SORTED ON ABBREVAITION

HKDN	HERNDON	WV
HDBT	HOBART	IN
BOLH	HOT I.Y HDTLL	SC
BOMB	HOLMES B£ACH	FL
BOHR	HOMER	IL
BONY	HONEYBEND	IL
HOOP	HOOtKii*JXJP*	IL
HOPE	HOPEWELL	VA
HPEV	HAPEVILLE	GA
HRBG	HARRrSONBURG	VA
HRDN	HARDHf	MO
HRDS	HARRQDSKJRG	KY
HRMN	HARfilHaS	TN
HRSB	HARRISBURG	IL
HRVL	HARVEL.	IL
HSPR	HOT SPRINGS	NC
HTSV	HUNT&VILLE	AL
HUDD	HUDDLESTON	VA
HUGO	HUGO	IN
~HOJT	HURRICANE JCT	VA
HULS	HULLS	IL
HUNT	HUNTINGTON	IN
HURL	HURLEY	VA
BURN	HURON	OH
IAR6	IAEGEH	WV
IDLW	IDLEWILD	OH
ILES	ILES	IL
ILPS	TLLIPOLTS	IL
IMOG	IMOGENS	IA
INDS	INDIANAPOLIS	IN
INDT	INDIAN TRAIL	NC
INGS	INGLESIDE	WV
INMN	INMAN	SC
IRNV	IRONSVILLE	OH
IRON	IRONTON	OH
IUKA	IUKA	MS
IVES	IVESDALE	IL
JACK	JACK	VA
JART	JARRETT	VA
JAXI	JACKSONVILLE	IL
JAXV	JACKSONVILLE	FL
JEFC	JERHERSON CITY	TN
JELL	JELLXCO	TN

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON ABBREVAITION

JENK	JENKINTOWN	PA
JEWL	JEWELL	OH
JEWT	JEWETT	OH
JHNC	JOHNSON CITY	TN
JKSN	JACKSON	GA
JMSN	JAMESON	MO
JNGS	JENNINGS	MO
JOIN	N & W & CONRAIL	NY
JSB6	JONESBURG	MO
JSBR	JONESBORO	GA
JSPR	JASPER	AL
JSUP	JESUP	GA
KACI	KANSAS CITY	MO
KDAK	KODAK	TN
KEBD	KENBRIDGE	VA
KENO	KENOVA	WV
KENW	KENWOOD	OH
KEOK	KEOKUK	IA
KERN	KERMIT	WV
KEYS	KEYSTONE	WV
KEYT	KEYTESVILLE	MO
KGSP	KINGSPORT	TN
KING	KINGSTON	OH
KINN	KINNEY	VA
KIRK	KIRKSVILLE	MO
KMBL	KIMBALL	WV
KNDH	KINDERHOOK	IL
KNOX	KNOXVILLE	TN
KNXX	KNOX	IN
KOKO	KOKOMO	IN
KRNS	KARNES	IL
KUNK	KUNKLE	OH
KYSV	KEYSVILLE	VA
LAFY	LAFAYETTE	IN
LAKV	LAKEVILLE	IN
LANC	LANCING	TN
LAND	LANDERS	IL
LAPL	LAPLATA	MO
LAPT	LA PORTE	IN
LARL	LAUREL	MS
LATY	LATTY	OH
LAW	LAWRENCEVILLE	VA
LBCN	LIBERTY CENTER	OH
LBRT	LIBERTY	NC

APPENDIX

LOCJECEOH SORTED ON ABBREVAITION

LDLO	LUDLOW	KY
LECH	LEWIS CENTER	OH
LEED	r KRns>	AL
LENO	LENOXES	WV
LEPS	[illegible]	OH
r.peii	rPESmrar	va
LEXK	LEXINGTON	VA
LGRO	LA GRO	SC
LIMA	LIMA	IN
LITB	LITHIA	OH
LIZC	ELIZABETH CITY	VA
LIZL	[illegible]	NC
LKCT	LAKE CITY	GA
LNJY	EOVEJOY	FL
LNOR	I-ENQTR	IL
LNRC	LENOIR CITY	NC
LNWD	LTNWOC©	TN
LODG	LODGE	NC
LODI	LODI	IL
LOGP	LOGANSPORT	OH
LORA	LORAIN	IN
LOSP	LOCK SPRINGS	OH
LOUD	LOUDQN	MO
LOVN	LOVHSGTON	TN
LPST	LAMBEHTS POINT	IL
LSTR	LESTER	VA
LSVL	LOUISVILLE	WV
LTFD	LITCHFIELD	KY
LTUS	LOTUS	IL
LURA	LURAY	IL
LURI	LURICH	VA
LUTR	LUTHER	VA
LVLA	LOVILIA	MO
LVST	LIVINGSTON	IA
LWNB	LAWRENCEBURG	AL
LYBG	LYNCHBURG	KY
MACN	MACON	VA
MADR	MAGADORE	MO
MAHL	MARS HILL	OH
MALA	MALXMDA	NC
MALV	MALVERN	OH
		IA

APPENDIX

LDEZanON SORTED ON ABBREVAITION

MALY	MALDNET	VA
MANB	MANHATTAN	IL
MARK	MAJFrnmr	IN
MAUH	MAUMSE	OH
MCAR	MET CklsUMlill	IL
MCDO	MC K3HOUGH	GA
MCDT	MC DE3?MOTT	OH
MCFA	MC FALL	MO
MDLT	MT nni ^K't'i.jfi	TN
MDSN	MAnISQV	MO
MEDA	MDEINA	OH
MERD	MERIDOSIA	IL
MEXI	MEXICO	MO
MGEB	MAGEE	IN
MGRV	M3LW.W- GROVE	OH
MICY	MICHIGAN CITY	IN
MILL	MILLEN	GA
MILN	MTLAHT	MI
MILR	WILLIAM	GA
MKSV	MOCKSVILLE	NC
MLNS	MULLENS	WV
MLTR	MOULTRIE	GA
MLWK	MILWAUKEE	WI
MNDV	MOUNDVTLLE	AL
MNLO	MENLOO	GA
MNRO	MONROE	VA
MNSE	MUNCU2	IN
MNSF	MANSFIELD	IL
MNSN	MUNSON	MI
MNSS	MANASSAS	VA
MNTP	MONTBELIER	OH
MOBL	MOBILE	AL
MOBR	MORRISON	MO
MOCM	MONTCAU4	WV
MOCY	MLSSOAJRI CITY	MO
MOLT	MOULTON	IA
MONT	MGNTMQRENCI	IN
MORV	MOORESVTLLE	NC
MOVR	MORAVIA	IA
MPHS	MEMEHIS	TN
MPLS	MINNEAPOLIS	MS
MRCY	MONROE CITY	MO
MRGN	MQHix&tK£^JN	NC
MRGO	MARHSGD	IN
MRID	MERIDIAN	MS

SECTION II - FORMS AND RIS

APPENDIX

LOCATB3R SORTED ON ABBREVAITION

HRST	MORRISTOWW	TN
HRSV	MORMKOHVILLE	IL
HRVL	MARYVILLE	MO
MTBG	MARTINSBURG	MO
HTGM	MONTGOMERY	MO
HTKA	MATOAKA	WV
HTOL	MT OLIVE	IL
MTRL	MONTREAL	CN
MTST	MT STERLING	IL
HTVN	MT VERNON	IL
HTWN	MATEWAN	WV
BUSH	MUSCLE SSOALS	AL
H&DL	MKI;UTMn^iT.F	MI
W/IL	MAHtEJJtkiVlLLE	VA
HALB	NEW ALBANY	IN
NAPO	NAPOLEON	OH
BARR	NARROWS	VA
NASH	NASHVILLE	TN
NAUG	NAUGATUCK	WV
NAVR	NAVRRE	OH
N6LN	NEW BERLIN	IL
NBRN	NEW BERN	NC
KCAS	NEW CASTLE	IN
KEGA	NEOGA	IL
BEST	NORTH EAST	PA
KEWL	NEW LONDON	OH
NEWT	NEWTON	NC
NFIN	NORTH FINDLAY	OH
NFLO	NEW FLORENCE	MO
MFOR	NORTH FORK	WV
NGLO	NANTY GLO	PA
NHAV	NEW HAVEN	CN
NTAN	NIANTIC	IL
RICV	NICHOLASVILLE	KY
KIFA	NIAGRA FALLS	ON
NKAC	NORTH KANSAS CITY	MO
NKSN	NICHOLSON	MS
NLBT	NORTH LIBERTY	IN
NLEN	NEW LENOX	IL
NMKI	NAMEOKI	IL
NMKT	NEW MARKET	TN
HQLN	NOLAN	WV
NORF	NORFOLK	VA
HDRL	NEW; ORLEANS	LA
HORT	NORJ&itt	VA

APPENDIX

K1CATI0N SORTED ON ABBREVAITION

BORW	NOHWALK	OH
HOT*	HTT3Wk	TN
NPAR	NEW? FARTS	IN
HPRY	MfcUWN)itT	TN
HPRV	NffiV PROVIDENCE	NJ
KBTHf JnfuM	NORBORNE	Mn 1*1^
NRLO	NAELO	OH
NRMA	NORflA	TN
HSYD	NORSES YARD	AL
HTPS	ENTERPRISE	MS
NWAS	NEW WASHINGTON	OH
HWAV	NEW WAVERLY	IN
NYRK	Nffi* YORK	NY
OCNA	OCEANA	WV
ODFT	GE® FORT	NC
OFAL	Q'^SLLON	MO
OKCT	OAKLAND CITY	IN
OKDL	OAKI?ATiE	TN
OKHR	OAE HARBER	OH
OKLN	OAKLAWN	IL
OKOL	OKOLONA	OH
OKPT	OAK. POINT	OH
OKVL	OAKVALE	WV
OKWD	QSSMOOD	MI
OMHA	GBSMk	NE
ONDA	QNEEDA	TN
OOLT	(XILj.FKWAH	TN
OPEL	QEELIKA	AL
ORIK	QHSEITCK	MO
ORNG	OR^ySGE	VA
ORPK	QRLAND PARK	IL
ORVI	QKKTLLE	OH
OTTN	OTTERBEIN	IN
OTUM	GXXOMWA	IA
OXFD	OXFORD	NC
PAGE	PA^E	WV
PAMP	PAMPLIN	VA
PAMR	PALHER	IL
PAND	PANDORA	OH
PARI	PARIS	MO
PATO	FA3JTONSBURG	MO
PAXT	PAXTON	IL
PAXX	PAJ£	WV
PAYN	PAYNE	OH

APPENDIX

LOGK32X* SORTED ON ABBREVAITION

PDTN	PENDLETOS	MO
PEBG	PEARXSBORG	VA
PEEB	PRRRT.RPt	OH
PELL	PELL CITY	AL
PEMB	[illegible]	VA
PEOR	PEOR1&	IL
PERU	PERU	IN
PERY	PERRY	FL
PHIL	PHILADELPHIA	PA
PHLO	PHILO	IL
PHOE	PHOEBE	VA
PIJT	PITTSBURGH JCT	OH
PINE	PINE	IN
PITB	[illegible]	PA
PKTN	PIITBTOP	OH
PLYM	PLYMOUTH	NC
PNHL	PINE BEELL	AL
PNSV	PAINESVILLE	OH
PNVY	PINE VALLEY	OH
PNXC	PHENIX CITY	AL
POAG	POAGE	IL
PONT	PONTIAC	IL
PORT	PORTSMOUTH	OH
POUM	POUNDING MILL	VA
POWL	POWELL	AL
PRIC	PRICHRRD	WV
PRIN	PRINCETON	WV
PRSH	PARRISH	AL
PSCT	PROSPECT	VA
PTBG	PETERSBURG	VA
PTFD	PITTSFIELD	IL
PTKA	PALATKA	FL
PTRP	PORT REPUBLIC	VA
PTYD	PORTLOCK YARD	VA
PULA	PULASKI	VA
PVIL	PINEVILLE	WV
QCTY	QUEEN CITY	MO
QUIN	QUINCY	IL
QUIT	QUITMftK	GA
RADF	RADFORD	VA
RALE	RALEIGH	NC
RAMS	RAMSEY	IL

SECTION II - FORMS AND RIS

APPENDIX

EOCATBDR SORTED ON ABBREVAITION

HARD	RARDIN	OH
KAYM	RAYMOND	IL
BBNS	HGBBUfS	TN
BRTN	ROBERTSON	MO
HCHE	RITCHIE	IL
BDSV	PKTnsvrivr R	NC
HEDK	RKBD1CK	IL
BEST	RESTON	VA
REXX	REX	OH
BH?I fn	•RA]DI?R-F"PI'VP	WV
BICD	RICHMOND	VA
BICE	RICE	VA
BICH	RICHLAHDS	VA
BIFT	RIPE	WV
HING	BIMRRnr.n	GA
BIVT	RiVHUTOM	VA
BKDL	porncnar.R	WV
BKGP	ROCKY GAP	VA
RKHL	ROCKffILL	SC
RKMT	ROCKMART	GA
RKWD	ROCKWOOD	TN
RNGB	ORANGEBURG	SC
RNSR	RRNSSFT.AFB	MO
BOCH	RQCfflSiiTlSK	IN
BOKE	ROANOKE	VA
ROKF	ROCKi'IELD	IN
ROME	ROME	GA
ROMT	ROCKY MOUNT	VA
ROMU	ROMULUS	MI
ROOK	ROOK	PA
ROXB	ROXBORO	NC
RRET	RURAL. RETRE	VA
RRIV	ROCK RIVER	OH
RRLH	RURAL HALL	NC
RSVL	RUSSELLVILLE	AL
RUNL	RUNNELLS	IA
RVRG	RIVEE ROUGE	MI
SADI	SADIEVTLLE	KY
SADO	SADORUS	IL
SALM	SALEH	VA
SALT	SALTPETRE	WV
SAMP	SAMPSEL	MO
SAND	SANEUSKY	OH

SECTION II - FORMS> AND RIS

APPENDIX

LOCATrOlf SORTED ON ABBREVAITION

SARD	SARDINIA	OH
SAVH	SAVANNAH	GA
SBYV	S.H.Kr.BWTnrj.R	KY
SCOT	SCOTTiiBuJslO	AL
SCTO	SCJilTii	OH
SDCR	SAND CHEEK	MI
SDSV	SANDERSVILLE	GA
SELM	SELMA	AL
SFID	SMITHFIKLD	OH
SFLD	SOUTHFIEXD	MI
SHAN	SHANNON:	WV
SHEF	SHEFFIELD	AL
SHEN	SHENANDOAH	VA
SHJC	SHKMimi-XfrftH JCT	WV
SHMI	SHAWHEE MISSION	KA
SHPT	&HitliVfcibtif<T	LA
SHTH	SHKBAMLi&TuWN	WV
SIBL	SIBLEY	IL
SICY	SILVER CITY	IA
SIDN	SIDNEY	IL
SLDA	SALUDA	NC
SLFK	SUFFOLK	VA
SLIN	STATE LIKE	IN
SLRN	SOUTH LORAIN	OH
SLSB	SALISBURY	NC
SMRT	SUMMKkltWN	GA
SNEC	SENECA	SC
SNMN	SAUNEHXN	IL
SNRY	SUNRAY	VA
SOBO	SOUTH BOSTON	VA
SOME	SOMERSET	KY
SOPT	SOUTH POINT	OH
SOWY	SOUTH WHITLEY	IN
SPCT	SPRING CITY	TN
SPCV	SPENCERVILLE	IN
SPFD	SPRINGFIELD	IL
SPNC	SPENCER	NC
SPTG	SPARTANBURG	SC
STAN	STANLEY	VA
STAR	STAR	NC
STAU	STAUHTON	IL

SECTION H - FORMS AND RIS

APPENDIX

LQCATim SORTED ON ABBREVAITION

S-EBV	STEUBEMVILLE	OH
SXTBY	STAfcllliSilhBt	MO
SFCH	ST CHA3LKS	MO
STEL	STWET.1F	IL
S-TGN	STUKGELlHi	MO
&FGO	ST GEORGE	SC
STKB	STOCKBRIDGE	GA
STKY	STARKY	VA
STLO	ST LOUIS	MO
STMY	ST MARY	OH
STNS	STEARNS	KY
STOM	ST THOMAS	ON
S3ON	STOHU9GTON	IL
STPL	ST EKUX.	VA
STRE	STREATOR	IL
STRN	STRAW	IL
STSB	STATiSiittORO	GA
STWP	STRAWBERRY PLAINS	TN
SUBN	SOUTH BEND	IN
SULV	SULLIVAN	IL
SUMN	SUMNER	MO
SUTH	SUTHERLAND	VA
SWBR	SOUTH WEBSTER	OH
SWCK	SWOEDS CREEK	VA
SWNB	SWAINSBORO	GA
SWTR	SWEETWATER	TN
SYLC	SYLACAUGA	AL
SYMN	SYMERTON	IL
TALA	TALLAPOOSA	AL
TAYV	TAYLORVILLE	IL
TAZE	TAZEWELL	VA
TFTN	TIFTON	GA
THAK	THACKER	WV
THAX	THAXTON	VA
TILT	TILTOH	IL
TINF	TINTON FALLS	NJ
TINO	TOLONO	IL
TIPN	TIPTOH	IN
TIPT	TIP TOP	VA
TLDO	TOLEDO	OH
TLRS	TAYLORS	SC
TLSA	TULSA	OK
TOCA	TOCCOA	GA

SECTION H - FORMS AND RIS

APPENDIX

LOCATION SORTED ON ABBREVAITION

TOLR	TOLEff	KY
TOLS	TQLLESBON	IN
TOMR	TIMS SEVER	NJ
TOPK	TQEEEQfc	IN
TRAC	TfflVCY"	IA
TRIP	TttlPUHiTT	MO
TRUS	TRUESDALE	MO
TUCB	TUSCUMBIA	AL
TUSC	TUSCALOOSA	AL
UFLA	EUFAULAX	AL
UNON	UNIOH:	SC
UNSP	UNIQH; SPRINGS	AL
URBA	URBSJSa.	IL
VAIP	VALFSffiAISO	IN
VALD	VALDOSTA	GA
VANC	VANCE:	AL
VCTY	VALLES" CITY	IL
VEDA	FEDE&	WV
VENC	VENICE	IL
VESU	VESUVIUS	VA
VICT	VICTORIA	VA
VLON	VANLOON	IN
VRML	VERMILION	OH
VRNA	VARIBft	NC
VRSL	VERS&ILIES	IL
VYCG	VALLEY CROSSING	OH
WABA	WABASH	IN
WAFD	WAKEFIELD	VA
WAHE	WAUE&TCHIE	TN
WALT	WALTOK	KY
WASH	WASHINGTON	DC
WASN	WAUSEON	OH
WATN	WARRENTON	OH
WAVE	WAVER^Y	OH
WAYN	WAYNESBORO	VA
WBRG	WILLIAMSBURG	OH
WCOV	WALNUT COVE	NC
WDBN	WOODEKJRN	IN
WEBB	WEBB	WV
WELH	WELCH	WV
WELL	WELLAND	ON
WENZ	WENTZVILLE	MO
WGRO	WEST GROVE	IA

SECTION II - FORMS AND RIS

APPENDIX

LOCATTOK SORTED ON ABBREVAITION

WHBG	WHEELESSBURG	OH
WHLC	WHEELING	WV
wane	WtlX'l^wl'Ajt.H.Wt	MI
WHWD	WHITEWOQD	VA
WICH	WICHITA	KA
WILC	WILCOE	WV
WELL	WILLIE	MI
WILM	WILMINGTON	IL
WILT	WILTON	AL
WINC	WIN(Jta£i£i'i.'£>M	OH
WING	WING	IL
WKDA	WAKENDA	MO
WKSA	WAKARUSE	IN
WLBN	WEST LEBANON	IN
WLBY	WILLOUGHBY	OH
WLSN	WILSON	VA
WLSV	WELLSVTLLE	MO
WLTN	WELLiJjkiTUN	OH
WLVL	WELLVTLLE	VA
WMPT	WILLIAMSPORT	IN
WMSN	WILLIAMSON	WV
WMST	WILLIAMSTOWN	KY
WNSL	WINSLOW	IN
WNSR	WINDSOR	ON
WNSV	WAYNESVILLE	NC
WOLC	WOLCOTVILLE	IN
WPNT	WEST POINT	OH
WRTH	WORTH	IL
WRYD	WELLER YARD	VA
WSFL	WEST FIELD	NY
WSLM	WINSTON-SALEM	NC
WSTF	WESTFIELD	OH
WSTV	WESTVILLE	IN
WTCY	WRIGHT CITY	MO
WTHE	WHITEHOUSE	OH
WTHN	WHITEHORNE	VA
WTRN	WATERTOWN	CT
WUNI	WEST UNITY	OH
WVRV	* WEAVERVILLE	NC
WYAT	WYATT	IN
WYBG	WAYNESBURG	KY
WYVL	WYTHEVILLE	VA
ZNLV	ZANESVILLE	OH
ZUNI	ZUNI	VA

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON STATE AND CITY

ALXC	ALEXANDER CITY	AL
ALEX	ALEXANDRIA	AL
ANST	ANNISTON	AL
ALLA	ATTALLA	AL
BESS	BESSEMER	AL
BMHM	BIRMINGHAM	AL
BURS	BURSTALL	AL
CHSB	CHILDERSBURG	AL
CLSV	COLLINSVILLE	AL
COOP	COOSA PINES	AL
CORD	CORDOVA	AL
ETWA	ETOWAH	AL
UFLA	EUFAULA	AL
FTPN	FORT PAYNE	AL
GADS	GADSDEN	AL
HALV	HALEYVILLE	AL
HLVL	HALEYVILLE	AL
HTSV	HUNTSVILLE	AL
JSPR	JASPER	AL
LEED	LEEDS	AL
LVST	LIVINGSTON	AL
MOBL	MOBILE	AL
MNDV	MOUNDVILLE	AL
NSYD	NORRIS YARD	AL
OPEL	OPELIKA	AL
PRSH	PARRISH	AL
PELL	PELL CITY	AL
PNXC	PHENIX CITY	AL
PNHL	PINE HILL	AL
POWL	POWELL	AL
RSVL	RUSSELLVILLE	AL
SCOT	SCOTTSBORO	AL
SELM	SELMA	AL
SHEF	SHEFFIELD	AL
SYLC	SYLACAUGA	AL
TALA	TALLAPOOSA	AL
TUSC	TUSCALOOSA	AL
TUCB	TUSCUMBIA	AL
UNSP	UNION SPRINGS	AL
VANC	VANCE	AL
WILT	WILTON	AL

APPENDIX

DQCffiEION SORTED ON STATE AND CITY

BETH	BETHEL	CT
WTRN	WAILbiijCI.UWN	CT
WASH	WASHINGTON	DC
HOMB	HOLMES BEACH	FL
JAXV	JACKSONVILLE	FL
LKCT	LAEE CITY	FL
PTKA	EALATKA	FL
PERY	PERRY	FL
ALTO	ALTJO[1]	GA
AMCS	AMEJULCUS	GA
ATLG	ATLANTA	GA
AUGA	AUGUiiTA	GA
ASTL	AUSTELL	GA
BAXL	BAXLEY	GA
BRMN	BREMEN	GA
BRBG	BSXBQEBORO	GA
BUCB	BUCHANNAN	GA
BUFO	HUFOHD	GA
CMBL	CHAMBLEE	GA
CHRN	COCHRAN	GA
CNLY	CONLEY	GA
CRDL	CORDELE	GA
DALT	DALTON	GA
DRVL	DOSAVILLE	GA
DOVL	DQCTGLASVILLE	GA
DULU	DUIoxxu	GA
EPNT	EAST POINT	GA
ELVA	ELLAVILLE	GA
FPRK	EC3EEST PARK	GA
FTVL	EOST VALLEY	GA
GNSV	GAINESVILLE	GA
GARC	GARDEN CITY	GA
GRDN	GDMX3N	GA
GRAY	GRAY	GA

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON STATE AND CITY

CTtFN	GRIFFIN	GA
HPEV	HAPEVILLE	GA
HELN	HELENA	GA
JKSN	JACKSON	GA
JSUP	JESUP	GA
JSBR	JONESBORO	GA
LIZL	LIZELLA	GA
MCDO	MC DONOUGH	GA
MNLO	MENLOO	GA
MILL	MILLEN	GA
HILR	MILLER	GA
MLTR	MOULTRIE	GA
QUIT	QUITMAN	GA
RING	RINGGOLD	GA
RKMT	ROCKMART	GA
ROME	ROME	GA
SDSV	SANDERSVILLE	GA
SAVH	SAVANNAH	GA
STSB	STATESBORO	GA
STKB	STOCKBRIDGE	GA
SMRT	SUMMERTOWN	GA
SWNB	SWAINSBORO	GA
TFTN	TIFTON	GA
TOCA	TOCCOA	GA
VALD	VALDOSTA	GA
ALBI	ALBIA	IA
BLCH	BLANCHARD	IA
BUSY	BUSSEY	IA
COIN	COIN	IA
CBLF	COUNCIL BLUFF	IA
DftfOS	DES MOINES	IA
DUNR	DUNREATH	IA
ESWI	EAST SWITCH	IA
HAVY	HARVEY	IA
IMOG	IMOGENE	IA
KEOK	KEOKUK	IA
LVLA	LOVILIA	IA
MALV	MALVERN	IA
MOVR	MORAVIA	IA
MOLT	MOULTON	IA

APPENDIX

LOCATION SORTED ON STATE AND CITY

OTUM	OTTUMWA	IA
RUNL	RUNNELLS	IA
SICY	SILVER CITY	IA
TRAC	TRACY	IA
WGRO	WEST GROVE	IA
ALBO	ALBION	IL
ALXR	ALEXANDER	IL
ALTN	ALTON	IL
AR6N	ARGENTA	IL
ASBN	ASHBURN	IL
BARY	BARRY	IL
BAYL	BAYLIS	IL
BMNT	BEMENT	IL
BLMT	BLOOMINGTON	IL
BLMD	BLUE MOUND	IL
BLFS	BLUFFS	IL
BODY	BOODY	IL
BOWN	BOWEN	IL
BRBN	BRISBANE	IL
BKLN	BROOKLYN	IL
CALU	CALUMET	IL
CAMP	CAMPUS	IL
CRTH	CARTHAGE	IL
CTLN	CATLIN	IL
CGOR	CERRO GORDO	IL
CHMP	CHAMPION	IL
CHPN	CHAPIN	IL
CHTN	CHATTON	IL
CHYV	CHENEYVILLE	IL
CHGO	CHICAGO	IL
CHRG	CHICAGO RIDGE	IL
CLTN	CLAYTON	IL
CRNL	CORNELL	IL
CUPK	CUSTER PARK	IL
DWSN	DAWSON	IL

SECTION II - FORMS AND RIS

APPENDIX

LOCATTOB SORTED ON STATE AND CITY

BECA	DECATUE	IL
HJHCK	DEERK (.'T4KRK.	IL
DKVI	DENVER	IL
ESTL	EAST SOT LOUIS	IL
EDJC	EDWARDS JCT	IL
EDJS	EDWAEDSVILLE	IL
EMTN	EMINGTON	IL
ESSE	ESSEX	IL
FRFD	FAIRFIELD	IL
FRMT	FAIRMuB-T	IL
POOS	FOOSLASD	IL
FHST	FORREST	IL
GICY	GIBSQET CITY	IL
SJMJ	GOLDEK	IL
QQFD	GOODFXELD	IL
&RCY	GRANITE CITY	IL
GRIG	GRIGGSSVTLLE	IL
HRSB	HARRISBURG	IL
HRVL	HARVEL	IL
HOMR	HOMER	IL
SONY	HONEYEBEND	IL
HOOP	HOOPESTON	IL
HULS	HULLS	IL
BTTRK	HUMRICK	IL
ILES	ILES	IL
ILPS	ILLIPOLIS	IL
IVES	IVESDALE	IL
JAXI	JACKSONVILLE	IL
KRNS	KARNES	IL
KNDH	KINDERHOOK	IL
LAND	LANDERS	IL
LTFD	LITCHFIELD	IL
LODG	LODGE	IL
LTUS	LOTUS	IL
LNJY	LOVEJOY	IL
LOVN	LOVIN<3TON	IL
MANH	MANHATTAN	IL
MNSF	MANSFIELD	IL
HERD	MEREDOSIA	IL
MCAR	MT CARMEL	IL
OKLN	OAKLAWN	IL
ORPK	ORLAND PARK	IL

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON STATE AND CITY

PAMR	PALMER	IL
PAXT	PAXTON	IL
PEOR	PEORIA	IL
PHLO	PHILO	IL
PTFD	PITTSFIELD	IL
POAG	POAGE	IL
PONT	PONTIAC	IL
QUIN	QUINCY	IL
RAMS	RAMSEY	IL
RAYM	RAYMOND	IL
REDK	REDDICK	IL
RCHE	RITCHIE	IL
SADO	SADORUS	IL
SNMN	SAUNEMIN	IL
SIBL	SIBLEY	IL
SIDN	SIDNEY	IL
SPFD	SPRINGFIELD	IL
STAU	STAUNTON	IL
STEL	STEELE	IL
STON	STONINGTON	IL
STRN	STRAW	IL
STRE	STREATOR	IL
SULV	SULLIVAN	IL
SYMN	SYMERTON	IL
TAYV	TAYLORVILLE	IL
TILT	TILTON	IL
TINO	TOLONO	IL
URBA	URBANA	IL
VCTY	VALLEY CITY	IL
VENC	VENICE	IL
VRSL	VERSAILIES	IL
WILM	WILMINGTON	IL
WING	WING	IL
WRTH	WORTH	IL

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON STATE AND CITY

ANDR	ANDREWS	IN
AROS	ARGOS	IN
ASHL	ASHLEY	IN
AHUD	ASHLEY HUDSON	IN
ATIC	ATTICA	IN
BNTN	BENTON	IN
BLFT	BLUFFTON	IN
BUCR	BUCK CREEK	IN
BTLR	BUTLER	IN
CYGA	CAYUGA	IN
CLYM	CLYMERS	IN
CROK	CROCKER	IN
BLFI	DELPHI	IN
EWAY	EAST WAYNE	IN
ETON	EATON	IN
ELWD	ELWOOD	IN
ENGL	ENGLISH	IN
EVNS	EVANSVILLE	IN
FORA	FORAKER	IN
FTWF	FORT WAYNE	IN
FKFT	FRANKFORT	IN
GARY	GARY	IN
GRBL	GRAYBILL	IN
HMND	HAMMOND	IN
HFCY	HARFORD CITY	IN
HART	HARTMAN	IN
HLMR	HELMER	IN
HOBT	HOBART	IN
HUGO	HUGO	IN
HNBG	HUNTINGBURG	IN
HUNT	HUNTINGTON	IN
INDS	INDIANAPOLIS	IN
KNXX	KNOX	IN
KOKO	KOKOMO	IN
LGRO	LA GRO	IN
LAPT	LA PORTE	IN
LAFY	LAFAYETTE	IN
LAKV	LAKEVILLE	IN
LOGP	LOGANSPORT	IN
MGEE	MAGEE	IN

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON STATE AND CITY

MRGO	MARENGO	IN
WARN	MARION	IN
mcY	MICHIGAN CITY	IN
MONT	MONTMORENCI	IN
MNSE	MUNCIE	IN
KPAR	NEW PARTS	IN
NWAV	NEW WAVERLY	IN
OKCT	OAKLAND CITY	IN
OTTN	OTTERBEIN	IN
PERU	PERU	IN
PINE	PINE	IN
BOCH	ROCHESTER	IN
ROKF	ROCKFIELD	IN
SUBN	SOUTH BEND	IN
SOWY	SOUTH WHITLEY	IN
SPCV	SPENCERVILLE	IN
SLIN	STATE LINE	IN
TIPN	TIPTON	IN
TOLS	TOLLESTON	IN
TOPK	TOPEKA	IN
VAIP	VALPARAISO	IN
VLON	VANLOON	IN
WABA	WABASH	IN
WKSA	WAKARUSE	IN
WLBN	WEST LEBANON	IN
WSTV	WESTVILLE	IN
WMPT	WILLIAMSPORT	IN
WNSL	WINSLOW	IN
WOLC	WOLCOTVILLE	IN
WDBN	WOODBURN	IN
WYAT	WYATT	IN

APPENDIX

LOCATIOU SORTED ON STATE AND CITY

SHMI	SHAW&EE MISSION	KA
WICH	WICHITA	KA
BRNS	Bmj&EtJjjiK	KY
BUEC	BUECHEL	KY
BURL	BURLINGTON	KY
CAMB	CAMPBELLSTOWN	KY
DNVL	DANVILLE	KY
HRDS	HARRODSBURG	KY
LWNB	LAWRENCKbURG	KY
LSVL	LOUISVILLE	KY
LDLO	LUDLOW	KY
SADI	SADIEVILLE	KY
SBYV	SHELBYVILLE	KY
SOME	SOMERSET	KY
STNS	STEARNS	KY
TOLR	TOLER	KY
WALT	WALTON	KY
WYBG	WAYNESBURG	KY
WMST	WILLIAMSTOWN	KY
BSTN	BOSTON	MA
DEHM	DEDHAM	MA
BLTM	BALTIMORE	MD

SECTION H - FORMS AND RIS

APPENDIX

LOCATION SORTED ON STATE AND CITY

ADRN	ADRIAN	MI
ANAR	ANN ARBOR	MI
AZAL	AZALTA	MI
BELV	BWFX.KVjTLF	MI
CONE	CONE	MI
DLRA	DELRAY	MI
DETR	DETROIT	MI
GRAP	GRAND RAPIDS	MI
HAND	HAND	MI
HLWY	HOLLOWAY	MI
MILN	MILAN	MI
MNSN	MUNSON	MI
OKWD	QAKWOOD	MI
RVRG	RIVER ROUGE	MI
ROMU	ROMULUS	MI
SDCR	SAND CREEK	MI
SFLD	SOUTHFIELD	MI
WHTK	WHITTAKER	MI
WILL	WILLIE	MI

SECTION II - FORMS AND RIS

APPENDIJ

EDCATION SORTED ON STATE AND CITY

BERK	BERKLEY	MO
BRUN	MKJNSWICK	MO
BUJT	BURLINGTON JCT	MO
CARD	CAIRO	MO
CRTN	CARROLLTON	MO
CENT	CENTRALIA	MO
CHIL	CHILLICOTHE	MO
CLRK	CLARK	MO
CLMO	CLAYCOMO	MO
CLHL	CLIFTON HILL	MO
COLU	COLUMBIA	MO
CNCP	CONCEPTION	MO
DARL	DARLINGTON	MO
DWIT	HEWITT	MO
EXSP	EXCELSIOR SPRING	MO
FGSN	FERGUSON	MO
FTGR	FOUNTAIN GROVE	MO
GLTN	GALLATIN	MO
GILM	GILMORE	MO
6LWD	GLENWOOD	MO
GTOP	GREENTOP	MO
HALS	HALLSVILLE	MO
HNBL	HANNIBAL	MO
HRDN	HARDIN	MO
HENR	HENRIETTA	MO
HIHL	HIGH HILL	MO
JMSN	JAMESON	MO
JNGS	JENNINGS	MO
JSB6	JONESBURG	MO
KACI	KANSAS CITY	MO
KEYT	KEYTESVILLE	MO
KIRK	KIRKSVILLE	MO
LAPL	LAPLATA	MO
LOSP	LOCK SPRINGS	MO
LUTR	LUTHER	MO
MACN	MACON	MO
MDSN	MADISON	MO
MCFA	MC FALL	MO
MEXI	MEXICO	MO
MOCY	MISSOURI CITY	MO
MOBR	MOBERLY	MO

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON STATE AND CITY

MRCY	MONROE CITY	MO
NRBN	NORBORNE	MO
OFAL	O'FALLON	MO
ORIK	ORRICK	MO
PARI	PARIS	MO
PATO	PATTONSBURG	MO
PDTN	PENDLETON	MO
QCTY	QUEEN CITY	MO
RNSR	RENSSELAER	MO
RBTN	ROBERTSON	MO
SAMP	SAMPSEL	MO
STCH	ST CHARLES	MO
STLO	ST LOUIS	MO
STBY	STANBERRY	MO
STGN	STURGEON	MO
SUMN	SUMNER	MO
TRIP	TRIPLETT	MO
TRUS	TRUESDALE	MO
WKDA	WAKENDA	MO
WLSV	WELLSVILLE	MO
WENZ	WENTZVILLE	MO
WTCY	WRIGHT CITY	MO
CORI	CORINTH	MS
NTPS	ENTERPRISE	MS
HATT	HATTIESBURG	MS
IUKA	IUKA	MS
LARL	LAUREL	MS
MRID	MERIDIAN	MS
MPLS	MINNEAPOLIS	MS

A

APPENDIX

LOCATION SORTED ON STATE AND CITY

ASHV	ASHVILLE	NC
BADN	BADIN	NC
BALY	BAILEY	NC
BILT	BILTMORE	NC
BMTN	BLACK MOUNTAIN	NC
BRYS	BRYSON CITY	NC
CHAR	CHARLOTTE	NC
CHWN	CHOCOWINITY	NC
DRHM	DURHAM	NC
EDNT	EDENTON	NC
LIZC	ELIZABETH CITY	NC
ELKN	ELKIN	NC
FUVA	FUQUAY-VARINA	NC
GSTN	GASTONIA	NC
GLDS	GOLDSBORO	NC
GRAM	GRAHAM	NC
GRBO	GREENSBORO	NC
HKRY	HICKORY	NC
HIPT	HIGH POINT	NC
HSPR	HOT SPRINGS	NC
INDT	INDIAN TRAIL	NC
LNOR	LENOIR	NC
LBRT	LIBERTY	NC
LNWD	LINWOOD	NC
MAHL	MARS HILL	NC
MKSV	MOCKSVILLE	NC
MORV	MOORESVILLE	NC
MRGN	MORGANTON	NC
ODFT	OLD FORT	NC
OXFD	OXFORD	NC
PLYM	PLYMOUTH	NC
RALE	RALEIGH	NC
RDSV	REIDSVILLE	NC
ROXB	ROXBORO	NC
RRLH	RURAL HALL	NC
SLSB	SALISBURY	NC
SLDA	SALUDA	NC
SPNC	SPENCER	NC
STAR	STAR	NC
VRNA	VARINA	NC
WCOV	WALNUT COVE	NC
WNSV	WAYNESVILLE	NC
WVRV	WEAVERVILLE	NC
WSLM	WINSTON-SALEM	NC

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON STATE AND CITY

OMHA	OMAHA	NE
NPRV	NEW PROVIDENCE	NJ
TINF	TINTON FALLS	NJ
TOMR	TOMS RIVER	NJ
ALBN	ALBANY	NY
ANGO	ANGOLA	NY
BROK	BLACK ROCK	NY
BLAS	BLASDALE	NY
BFLO	BUFFALO	NY
DUKR	DUNKIRK	NY
NYRK	NEW YORK	NY
WSFL	WEST FIELD	NY
ADNA	ADENA	OH
AKON	AKRON	OH
ALVO	ALVORDTON	OH
ANTW	ANTWERP	OH
ASHD	ASHLAND	OH
ASHT	ASHTABULA	OH
AVRY	AVERY	OH
BANN	BANNON	OH
BATV	BATAVIA	OH
BECY	BEACH CITY	OH
BEDF	BEDFORD	OH
BELE	BELLEVUE	OH
BLAK	BLAKESLEY	OH
BREW	BREWSTER	OH
CANT	CANTON	OH
CARY	CAREY	OH
CARR	CARROTHERS	OH
CECL	CECIL	OH
CINC	CINCINNATI	OH
CLEV	CLEVELAND	OH
CVIL	CIRCLEVILLE	OH
CLAR	CLARE	OH
CLIF	CLIFFORD	OH
CLYD	CLYDE	OH
COLS	COLUMBUS	OH

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON STATE AND CITY

CONN	CQNHEAUT	OH
CONT	CONTINENTAL	OH
CSHC	COSEOCTON	OH
DEFI	DEFIANCE	OH
DLPH	DELPHOS	OH
DLTA	DELTA	OH
DVAL	DILLIONVALE	OH
EDON	EDON	OH
ELMI	ET.MTRA	OH
EUCL	EUCLID	OH
FINL	FINBLEY	OH
FSTR	fOitTORIA	OH
FRFU	FESBKLIN FURNACE	OH
FRMN	FREHQtiT	OH
FRNO	FRESNO	OH
GAMB	GAHBHINUS	OH
GETN	GEORGETOWN	OH
GLDO	GOULD	OH
GRSP	GREENSPRINGS	OH
HIGB	HIGBY	OH
HURN	HURON	OH
IDLW	IDLEWILD	OH
IRNV	IRONSVILLE	OH
IRON	IRONTON	OH
JEWL	JEWELL	OH
JEWT	u JiWiS.'i."X'	OH
KENW	KENWOOD	OH
KING	KINGSTON	OH
KUNK	KUNKLE	OH
LATY	LATTY	OH
LEPS	LEPSIC	OH
LECN	LEWIS CENTER	OH
LBCN	LIBERTY CENTER	OH
LIMA	LIMA	OH
LODI	LODI	OH
LORA	LORAIN	OH
MADR	MAGADORE	OH
MALA	MALINDA	OH
MGRV	MAPLE GROVE	OH
MAUM	MAUMEE	OH
MCDT	MC DERMOTT	OH
MEDA	MEDINA	OH
MNTP	MONTPELIER	OH

APPENDIX

LOCATION SORTED ON £STATE AND CITY

NRLO	NARLO	OH
NWAS	NEW WASHINGTON	OH
NORW	NORWALK	OH
OKHR	OAK HARBER	OH
OKPT	OAK POINT	OH
OKOL	OKOLONA	OH
ORVI	ORVILLE	OH
PNSV	PAINESVILLE	OH
PAND	PANDORA	OH
PAYN	PAYNE	OH
PEEB	PEEBLES	OH
PKTN	PIKETON	OH
PNVY	PINE VALLEY	OH
PUT	PITTSBURGH JCT	OH
PORT	PORTSMOUTH	OH
RARD	RARDIN	OH
REXX	REX	OH
RRIV	ROCK RIVER	OH
SAND	SANDUSKY	OH
SARD	SARDINIA	OH
SCTO	SCIOTO	OH
SFID	SMITHFIELD	OH
SLRN	SOUTH LORAIN	OH
SOPT	SOUTH POINT	OH
SWBR	SOUTH WEBSTER	OH
STMY	ST MARY	OH
STBV	STEUBENVILLE	OH
TLDO	TOLEDO	OH
VYCG	VALLEY CROSSING	OH
VRML	VERMILION	OH
WATN	WARRENTON	OH
WASN	WAUSEON	OH
WAVE	WAVERLY	OH
WLTN	WELLINGTON	OH
WPNT	WEST POINT	OH
WUNI	WEST UNITY	OH
WSTF	WESTFIELD	OH
WHBG	WHEELERSBURG	OH
WTHE	WHITEHOUSE	OH
WBRG	WILLIAMSBURG	OH
WLBY	WILLOUGHBY	OH
WINC	WINCHESTER	OH
ZNLV	ZANESVILLE	OH

APPENDIX

LOCATION SORTED ON STATE AND CITY

FTER	FT ERIE	ON
STOM	ST THOMAS	ON
TORO	TORONTO	ON
WNSR	WINDSOR	ON
WELL	WELLAND	ON
AVEA	AVELLA	PA
BRTN	BRUCETON	PA
CAR6	CARNEGIE	PA
COSV	CONNELLSVILLE	PA
ERIE	ERIE	PA
GIRD	GIRGARD	PA
JENK	JENKINTOWN	PA
PHIL	PHILADELPHIA	PA
PITB	PITTSBURGH	PA
ROOK	ROOK	PA

APPENDIX

LOCATION SORTED ON STATE AND CITY

AKEN	AIKEN	SC
ADSN	ANDERSON	SC
BTSB	BATESBURG	SC
BLKS	BLACKSBURG	SC
BLKV	BLACKVILLE	SC
CHHT	CHARLESTON HEIGHT	SC
CHES	CHESTER	SC
COLA	COLUMBIA	SC
DORC	DORCHESTER	SC
GRNV	GREENVILLE	SC
GNWD	GREENWOOD	SC
HOLH	HOLLY HILL	SC
INMN	INMAN	SC
LEXN	LEXINGTON	SC
RN6B	ORANGEBURG	SC
RKHL	ROCK HILL	SC
SNEC	SENECA	SC
SPTG	SPARTANBURG	SC
STGO	ST GEORGE	SC
TLRS	TAYLORS	SC
UNON	UNION	SC

APPENDIX

LOCATION SORTED ON STATE AND CITY

ATNS	ATHENS	TN
BSST	BASE STATE TN	TN
BLNE	BLAINE	TN
BRSN	BRONSON	TN
BLGP	BULLS GAP	TN
CHGA	CHATTANOOGA	TN
CHHL	CHURCHILL	TN
CNTN	CLINTON	TN
CLRV	COLLIERVILLE	TN
CORY	CORYTON	TN
DASY	DAISY	TN
DAYT	DAYTON	TN
EMRG	EMORY GAP	TN
FRSC	FRISCO	TN
GNVL	GREENVILLE	TN
HRMN	HARRIMAN	TN
HLST	HOLSTON	TN
JELL	JELLICO	TN
JEFC	JERRERSON CITY	TN
JHNC	JOHNSON CITY	TN
KGSP	KINGSPORT	TN
KNOX	KNOXVILLE	TN
KDAK	KODAK	TN
LANC	LANCING	TN
LNRC	LENOIR CITY	TN
LOUD	LOUDON	TN
MPHS	MEMPHIS	TN
MDLT	MIDDLETON	TN
NPRT	NEWPORT	TN
NOTA	NIOTA	TN
NRMA	NORMA	TN
OKDL	OAKDALE	TN
ONDA	ONEIDA	TN
OOLT	OOLTEWAH	TN
RBNS	ROBBINC	TN
RKWD	ROCKWOOD	TN
SPCT	SPRING CITY	TN
STWP	STRAWBERRY PLAINS	TN
SWTR	SWEETWATER	TN
WAHE	WAUHATCHIE	TN

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON STATE AND CITY

ABIL	ABILENE	VA
ABIN	ABINGDON	VA
ALTA	ALTAVISTA	VA
ANDV	ANDOVER	VA
APPA	APPALACHIA	VA
APTX	APPOMATTOX	VA
ARLT	ARLINGTON	VA
BAST	BASSETT	VA
BLSP	BELLSPRING	VA
BENT	BENTONVILLE	VA
BYVL	BERRYVILLE	VA
BUNV	BEUNA VISTA	VA
BLUR	BLUE RIDGE	VA
BRIS	BRISTOL	VA
BKNL	BROOKNEAL	VA
BURK	BURKEVILLE	VA
CMRN	CAMERON RUN	VA
CARB	CARBO	VA
CHTV	CHARLOTTESVILLE	VA
CSPK	CHESAPEAKE	VA
CHBG	CHRISTIANSBURG	VA
CLVY	CLINCH VALLEY	VA
CLDL	CLOVERDALE	VA
COEB	COEBURN	VA
CREW	CREWE	VA
CULL	CULLEN	VA
CULP	CULPEPPER	VA
DISM	DISMAL YARD	VA
DISP	DISPUTANTA	VA
DRYF	DRY FORK	VA
DUCR	DUMP CREEK	VA
EGST	EGGLESTON	VA
ELIS	ELLISTON	VA
EMPR	EMPORIA	VA
FLML	FALLS MILLS	VA
FLTP	FLAT TOP YARD	VA
FRNK	FRANKLIN	VA
FTRL	FRONT ROYAL	VA
GATC	GATE CITY	VA
GLSP	GLADE SPRING	VA

SECTION II - FORMS AND1 RIS

APPENDIX

LOCATION SORTED ON STATE AND CITY

GLAS	GLASGOW	VA
GOOD	GOODE	VA
GDVW	GOODVIEW	VA
GDNV	GORDONSVILLE	VA
GRDY	GRUNDY	VA
HAMT	HAMILTON	VA
HRBG	HARRISONBURG	VA
HOPE	HOPEWELL	VA
HUDD	HUDDLESTON	VA
HURL	HURLEY	VA
HUJT	HURRICANE JCT	VA
JACK	JACK	VA
JART	JARRETT	VA
KEBD	KENBRIDGE	VA
KYSV	KEYSVILLE	VA
KINN	KINNEY	VA
LPST	LAMBERTS POINT	VA
LAWV	LAWRENCEVILLE	VA
LESB	LEESBURG	VA
LITH	LITHIA	VA
LURA	LURAY	VA
LURI	LURICH	VA
LYBG	LYNCHBURG	VA
MALY	MALONEY	VA
MNSS	MANASSAS	VA
MNRO	MONROE	VA
ORNG	ORANGE	VA
PAMP	PAMPLIN	VA
PEBG	PEARISBURG	VA
PEMB	PEMBROKE	VA
PTBG	PETERSBURG	VA
PHOE	PHOEBE	VA
PTRP	PORT REPUBLIC	VA
PTYD	PORTLOCK YARD	VA
POUM	POUNDING MILL	VA
PSCT	PROSPECT	VA
PULA	PULASKI	VA
RADF	RADFORD	VA
REST	RESTON	VA
RICE	RICE	VA
RICH	RICHLANDS	VA
RICD	RICHMOND	VA
RIVT	RIVERTON	VA

APPENDIX

LOCATION SORTED ON STATE AND CITY

ROKE	ROANOKE	VA
RKGP	ROCKY GAP	VA
ROMT	ROCKY MOUNT	VA
RRET	RURAL RETRE	VA
SALM	SALEM	VA
SHEN	SHENANDOAH	VA
SOBO	SOUTH BOSTON	VA
STPL	ST PAUL	VA
STAN	STANLEY	VA
STKY	STARKY	VA
SLFK	SUFFOLK	VA
SNRY	SUNRAY	VA
SUTH	SUTHERLAND	VA
SWCK	SWORDS CREEK	VA
TAZE	TAZEWELL	VA
THAX	THAXTON	VA
TIPT	TIP TOP	VA
VESU	VESUVIUS	VA
VICT	VICTORIA	VA
WAFD	WAKEFIELD	VA
WAYN	WAYNESBORO	VA
WRYD	WELLER YARD	VA
WLVL	WELLVILLE	VA
WTHN	WHITEHORNE	VA
WHWD	WHITEWOOD	VA
WLSN	WILSON	VA
WYVL	WYTHEVILLE	VA
ZUNI	ZUNI	VA

APPENDIX

LOCATION SORTED ON STATE AND CITY

AMIG	AMIGO	WV
AUVL	AUVILLE	WV
BVIL	BAILEYSVILLE	WV
BECK	BECKLEY	WV
BLFD	BLUEFIELD	WV
BLST	BLUESTONE	WV
BUBR	BUCHANAN BRANCH	WV
CHTO	CHARLESTON	WV
CHAT	CHATTAROY	WV
CRUM	CRUM	WV
DAVY	DAVY	WV
DELM	DE LORME	WV
DEVN	DEVON	WV
ECKM	ECKMAN	WV
ELMO	ELMORE	WV
FARM	FARM	WV
VEDA	FEDRA	WV
FTGA	FORT GAY	WV
GLBT	GILBERT	WV
GLAL	GLENALUM	WV
GLHA	GLENHAYES	WV
HNDN	HERNDON	WV
HEWT	HEWLETT	WV
IARG	IAEGER	WV
INGS	INGLESIDE	WV
KENO	KENOVA	WV
KERN	KERMIT	WV
KEYS	KEYSTONE	WV
KMBL	KIMBALL	WV
LENO	LENORE	WV
LSTR	LESTER	WV
MOCM	MONTCALM	WV
MLNS	MULLENS	WV
OKVL	OAKVALE	WV
OCNA	OCEANA	WV
PAGE	PAGE	WV
PAXX	PAX	WV
PVIL	PINEVILLE	WV
PRIC	PRICHARD	WV
PRIN	PRINCETON	WV
RFLD	RADERFIELD	WV

SECTION II - FORMS AND RIS

APPENDIX

LOCATION SORTED ON STATE AND CITY

RIFT	RIFT	WV
RKDL	ROCKDALE	WV
SALT	SALTPETRE	WV
SHAN	SHANNON	WV
SHJC	SHENANDOAH JCT	WV
SHTH	SHEPARDSTOWN	WV
THAK	THACKER	WV
WEBB	WEBB	WV
WELH	WELCH	WV
WHLC	WHEELING	WV
WILC	WILCOE	WV
WMSN	WILLIAMSON	WV

RADIO INSTRUCTIONS MANUAL

DRAWING NUMBER	TITLE
RD 200	INDEX - 200 GROUP
RD 204	FORM 699
RD 206	FORM 698

LJI^P NORFOLK
SSSSS=SSSsfW0 SOUTHERN

COMMUNICATIONS DEPARTMENT

SECTION 2 - FORMS & R1S

ENGirCERt A.F.C.	* " ~ D.E.B.	DRAWING NO. RD 200	
ORAWNi R.B.D.	OATEi 7-15-89		

FORM 699	NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT
DRAWN: R.B.D.	ENGINEER: A.F.C.	DRAWING NO. 204
DATE: 8-16-84	CHECKED: D.E.B.	

NOTE: [illegible] TWO POINT [illegible] FOR [illegible] INFORMATION.

ATTACH THIS PART OF TAG TO RADIO BEING SHIPPED TO SHOP

(See Other Side For Instructions)

Name ______

Title ______

Gang No. (if any) ______

Town ______

State ______

DETACH HERE

REVERSE • FORM 699 (REV. 2/76)

RADIO RECORD

Radio Equipment No. I 8633

When radio is removed from spare stock and put into service, enter date it went into service and where it was installed in space below. Then detach this portion of tag along perforated line and mail.

Locomotive No. ______

Caboose No. ______ X

Other (Give details) ______

Date in Service ______ Installed At ______

Pool Code MECH

[illegible] MAY BE [illegible] SETS [illegible] FOR REPAIRS.

POST CARD DETACHED

ATTACH THIS PART OF TAG TO RADIO BEING SHIPPED TO SHOP

When radio is shipped to a radio shop for any reason, give your return address on other side of this portion of tag so radio shop will know where to send replacement unit.

DETACH HERE

FORM 699
ITEM# 116815

R.B.

NORFOLK SOUTHERN CORPORATION

[illegible] SOUTHERN [illegible]
[illegible] COMMUNICATIONS [illegible]
[illegible] OF ENGINEERING [illegible]
[illegible] SW
[illegible] 30303

POOL CODE AND SET NUMBER INSERTED ON CARD BEFORE SET LEFT SHOP.
ASSIGNMENT INFORMATION AND DATE COMPLETED IN FIELD.

FOWkMS
HCVi 7-15-89
PAGE: ______

NS tsstse.

COMMUNICATIONS OSPARTMENT - RAOIO RECORDS

____________ TYPE RADIO SETS SHOP LOCATION ____________

1 SST NUMN*	2 IN SHOP	3 BY	4 # MMW- m	S MOMK BY	ft	7 • KM	• OUT	***** - DISPOSITION

• acac LEGIBILITY OF IWOIO to ANO veraFr SET NO. AGAINST RIS OATA SASE.
» VERITY ASSKBiMENT OF (MOIO AM3 ENTER MAMTAINCNCE WORK PERFORMCO.

NS NORFOLK SOUTHERN

COMMUNICATIONS DEPARTMENT

FORM 698	ENGINEER. A.F.C.	APPROVEft D.E.B.	DRAWING NO. RD 206
	ORAWNi R.B.D.	OATEi 7-15-83	

Section 3

Base Stations

SECTION III - BASE STATIONS

This revision of Radio Instructions Section III supersedes and cancels any previous Radio Instructions for Section III.

A. General:

Radio log books, as such, are not required at fixed base station locations in the railroad service. Radio log books are required at fixed base station locations in the Marine Radio Service (drawbridges).

B. Posting of Licenses:

If a base station is a fixed land station, a photocopy of the license and any special F.C.C. authorizations must be posted at all control points for that station and at the transmitter location.

If the base station is not a fixed land station but operates in various locations (such as do our emergency base stations used at derailments, etc.), photocopy of the license covering such stations must be posted at the station and be filed with the Centralized Station Records in Atlanta.

C. Other Records and Requirements:

1. Carrier frequency measurements, modulation deviation readings and output power must be checked whenever the radio is being inspected.

2. A record of such determinations must be personally entered into Norfolk Southern's Radio Information System (RIS). These entries must be entered by the person doing the work, and he must be on the approved list of shop technicians protected by his security password. Measurements made on transmitters must be made under conditions specified in F.C.C. regulations.

3. It is not necessary for an employee to be F.C.C. certified to change out a transmitter.

4. The person who changes out the base station transmitter in the field **must** either enter the assignment information into the RIS or report this information via an assignment card (Form 699).

5. The station records will be in the RIS. Therefore it is very important that all maintenance and assignment records be promptly entered into the data base.

6. Only persons holding a General Class Radio Telephone License or approved certification will be permitted to adjust or repair a transmitter.

7. It will be necessary to enter maintenance information as described in Section II. This information must show disposition of the transmitter's carrier frequency, modulation deviation and output power and must be entered into RIS database.

   If the base station transmitter or mobile-relay transmitter is to remain in the radio shop, information should be entered showing 'shop.' followed by the shop code. Final assignment is to be entered upon assignment of the unit to a particular location. If this spare should remain in the shop for a period greater than thirty days, once the spare is used, a new inspection should be made and information entered.

D. Maritime Radio (Drawbridges):

In addition to normal required station records, marine utility stations at drawbridges require special records as follows:

1. Log book which will include:

   A) Station license

   B) Station log

   C) Service and maintenance data

   D) Operation guidelines

SECTION III - BASE STATIONS

2. Operator's Permit:

The Atlanta office will initiate station license, provide original station log book, additional log supplies as requested, obtain operator permits requested by Division Superintendent and issue special instructions.

Local Communications personnel must insure that log books are properly maintained and coordinate with the Division Superintendent to make sure all operators have permits.

E. Licensing Arrangements:

Norfolk Southern Corporation is composed of several railroad companies, each owning and operating radio transmitters. Some of these radio transmitters are mounted on locomotives and other mobile equipment which is, at times, located upon property of a railroad other than the owner.

In order for portable and mobile radio equipment to be used interchangeably by the various companies comprising the Norfolk Southern Corporation without violating the Rules and Regulations of the Federal Communications Commission, the several companies have an agreement whereby all portable and mobile radio transmitters will be licensed under a current F.C.C. license for the area in which the portable or mobile is operating in at the time.

F. General System Information:

The policy of the Federal Communications Commission presently in effect concerning radio transmitters in the railroad service is for the license to omit reference to manufacturer and type of apparatus authorized. Under licenses as now issued, any radio transmitter on the Commission's 'approved list' can be used, so long as the total number of transmitters authorized is not exceeded, and provided authorized power output is not exceeded. It will be a function of the Atlanta office to see that the total number of radio transmitters in service is not in excess of the number authorized.

SECTION III - BASE STATIONS

It is permissible to change the radio transmitter, including handie-talkies, at any location from one type to another without specific authority from the F.C.C., provided the newly installed transmitter is on the 'approved list,[1] and provided authorized power output is not exceeded. Because the F.C.C.'s 'approved list' of radio transmitter changes from day-to-day, no attempts will be made to promulgate the list. All radio transmitters presently in use on the Norfolk Southern Corporation are on the F.C.C.'s 'approved list.'

G. Southern System Information:

Radio license KA-5685 covering main line operation and KA-2875 covering yard and terminal operations, both issued in the name of Southern Railway Company, cover use of all portable and mobile transmitters mounted on locomotives, cabooses, automobiles, trucks, work equipment and all portable units such as handie-talkies. These two licenses are applicable on any of the railroads comprising the old Southern System.

License KA-2875 covers portable and mobile radio transmitters used in connection with yard, terminal and any special operations. This license specifies the frequency or frequencies which can be used and the locality in which they may be used. License KA-2875 can be used only in the localities specified on the license, and the frequency or frequencies used in any locality must be a frequency or frequencies specifically authorized for such locality.

License KA-5685 covers portable and mobile transmitters used in connection with mainline operations. This license specifies the frequencies that can be used but does not limit their use to any particular locality. License KA-5685 is applicable anywhere on the Southern Railway System.

License KA-5685 and KA-2875 do not cover any base or land stations whatever, nor do they cover any mobile relay transmitters or any fixed radio station of any kind. Each base, land, fixed and mobile relay station must have an individual license issued. All base and land stations licensed in the name of a Norfolk Southern Corporation subsidiary are allowed to communicate with the portable and mobile units of any other Norfolk Southern Corporation subsidiary.

SECTION III - BASE STATIONS

Front-to-rear radio operation and other mobile radio services, including handie-talkies, are covered by license KA-5685 when a base radio station is not involved. However, if a base, land, fixed or mobile relay radio station is involved, there must be an individual license covering the base, land, fixed or mobile relay station in addition to license KA-2875 or KA-5685 (or both) covering the portable and mobile units.

Copies of the following general radio license shouU be posted at each radio shop:

KA-5685	General Mobile - End-to-end (line of road)
KA-2875	General Mobile - Other than end-to-end
KB-23751	General Mobile - End-of-train devices
KII-414	Temporary (emergency) - Base station
KD-38606	Temporary (WL-Elim) - 450 Base
KSU-477	Temporary (Engr. of Const.) - Base station
KNIN-318	Temporary (EOT) - Base station
KGT-404	Temporary (locotrol) - Base station
WNPF-576	Temporary (Automatic Equip. ID) 900 Base
KC-5729	General Radio Location - Speedmeters
KH-2903	General Radio Location - Speedmeters
KS-6282	General Radio Location - Speedmeters
KK-9872	General Radio Location - Speedmeters

In addition, copies of all yard area radio licenses should be posted at that yard's radio shop.

Copies of above licenses may be obtained from the Atlanta office by written request.

SECTION III - BASE STATIONS

H. Norfolk and Western System Information:

Mobiles and portables will operate on appropriate licenses on the Norfolk & Western System.

Copies of the following general radio licenses should be posted at each radio shop if it is in the coverage area:

KV-2226	General Mobile	P&SS - system wide
KK-8919	General Mobile	Coordinate with Southern
KB-88167	General Mobile	Shenandoah Division
KB-74046	General Mobile	ARN - VA, WV, OH
KB-27378	General Mobile	ARN - VA, WV, OH, MI
KA-2202	General Mobile	Lake Region
KA-2210	General Mobile	Lake Region
KQ-9445	General Mobile	MW&S - NY, PA, OH, MI
KF-3341	General Mobile	MW&S - VA, WV, KY, NC
KC-8965	General Mobile	Eastern Region
KC-3965	General Mobile	Western Region
KD-38606	Temporary (WL-Elim) 450 Base	
WNNM-480	Temporary (Road & MW&S) Base station	
WNPF-576	Temporary (Automatic Equip. ID) 900 Base	

Copies of above licenses may be obtained from the Atlanta office by written request .

Director of Engineering
Communications Department

Atlanta, Georgia
File: 019-000b

SECTION IV - MARKINGS

This revision of Radio Instructions Section IV cancels and supersedes any previous Radio Instructions for Section IV.

A. General

These radio instructions explain the inspection records, RIS, engravings and/or identification plates, as well as specific location of the plate and/or engraving on the equipment.

When a new radio is ordered, the radio will be assigned a RRID and will be entered into RIS by the Atlanta office. All information that is known at that time will be entered (AFE, cost center, purchase order, model number, frequencies, purpose, etc.). The supervisor of the shop receiving the radio will get a copy of the requisition with the RRID on it. It is imperative that the shop receiving the radio for the engraving and initial inspection enters all information known about the radio that has not already been entered into RIS (serial number, initial assignment, initial technician's initials, location received, date received, etc.). This must be done on the 'CC screen. Verification of all information input by the shop or Atlanta should be closely checked and corrected if necessary. Maintenance will be reported on the 'MI' screen.

When a new radio is received by a shop, the technician that is doing the initial inspection will check the radio to insure the proper channels are installed. In the case of programmable radios which have prom codes for channel designation, the radio must be checked for the proper frequencies and insure that the display is exactly as the prom code list states.

It is the responsibility of the shop receiving the radio to notify the user department when the radio is ready to be put in service.

It is the direct responsibility of radio shop personnel to check every item of radio equipment handled to ascertain that proper ID plate (if that piece of equipment already has a plate attached) along with any special marking, is correct and to install the proper plate or make any specific marking is required.

SECTION IV - MARKINGS

B. IDENTIFICATION PLATES (RRID PLATES)

1. In compliance with F.C.C. requirements, and in order to facilitate the maintenance of centralized radio records, a RRID number will be assigned to all radio units. RRID plates or engravings displaying the Railroad ID number must be on all units according to installation drawings included at the end of this section. RRID plates will no longer be used for identification on new units. Engraved RRID numbers must be used on all new equipment.

   A plate will not be removed from a radio that already has one on it. If a radio comes in the shop that has had the plate removed or that is not legible, the radio will then be engraved according to the drawing concerning that particular radio. If the radio cannot be engraved properly and a RRID plate must be attached, contact the Atlanta office and arrangements will be made to provide a blank RRID plate.

2. In the interest of uniformity, certain drawings have been prepared showing the proper location of the RRID markings to be used for particular radios. Drawings prepared cover only the commonly used apparatus. In the absence of specific instructions, the engraving should be on the chassis of a unit rather than to a dust cover capable of being separated from the radio chassis proper. Local radio supervisory personnel should coordinate with the Atlanta Communications Office to determine a standardized installation in such instances, and a detailed drawing of the agreed upon installation should then be made a part of these radio instructions and distributed to all concerned.

SECTION IV - MARKINGS

C. SPECIAL MARKINGS

In certain instances, special markings are required on units of radio equipment.

1. Handie-talkies and pocket transmitters:

All handie-talkies, radios and pocket transmitter radio housings require engraving with the Southern Railway Company or Norfolk and Western name, as well as the RRID number of the unit. Other engraved information may be required, such as a labeling of the unit for service use. At radio shops which do not have an engraver, the housings must be removed from the unit and shipped to the nearest radio shop so equipped. After the housing is properly engraved, it will be returned.

2. All engine radios for use in Yard Service:

Units which are equipped with special assigned frequencies according to a location should have the entire front panel or control head of the radio set painted a distinctive color. The present color assignments are RED or ORANGE. Yard Shop code (such as ATLG, CHGA, BLFD, CHGO, SPNC, etc.) and YD SVC ONLY must be stencilled on the radio in large easily read letters. Local radio shops where these yard service radios are in use should advise any personnel charged with radio change-out duties the meaning of this special marking. This will prevent erroneous installation of any yard service radios on line-of-road locomotives or caboose cars. The distinctive marking will also alert these personnel to remove any such radios from any in-transit rolling stock. The Yard coding (shop code) on the radio will enable personnel to quickly return misplaced units to the proper location.

As shown on drawing RD-418, Motran multi-frequency Yard Service radios must have an additional plate showing available channels installed on the radio set.

On Syntor Yard Service radios, engravings will show the yard in conjunction with SOU RWY. Also labels will be attached showing the channels available on the radio. Refer to drawing number RD-435 for details. These labels can be obtained from the Senior Communications Engineer's Office in Atlanta by phone or written request.

SECTION IV - MARKINGS

On MCX 100 all-channel Yard Service radios, engravings will show SOU RWY or N&W RWY and RRID. In the past these radios had plates attached showing SOU RY CO and the radio RRID. This practice will no longer be used; engravings will be used. If a radio comes in the shop with a plate, do not remove the plate. Only engrave units which have had the plate removed or are new units. Refer to drawing number RD-438 for details. Also labels will be attached to the plug-in prom showing the channels available on the radio. These labels can be obtained from the Senior Communications Engineer's Office in Atlanta by phone or written request.

3. All radios:

   All radio sets must have a security (concealed) RRID number and the SOU RWY or N&W RWY hand-engraved internally on a designated permanent part of the radio chassis. In those cases where no instructions exist for placement of the marking on a particular type of radio set, local radio supervisory personnel should coordinate with the Atlanta Communications Office to determine a standardized installation.

4. All engine and caboose handsets (TMN-6002) must be engraved 'SOU RWY[1] or 'N&W RWY' before placing in service. Some of the old drawings show 'SOU RY CO.' Do not change the units with this abbreviation, but on all engravings done henceforth, you will now put 'SOU RWY' or 'N&W RWY.'

5. Where possible, 'SOU RWY' or 'N&W RWY' should be engraved on all control heads, converta-com units and any accessory items vulnerable to theft.

D. DRAWINGS

Drawings included in this section specify the location of engravings, ID plates and special markings of radio equipment. In special cases not covered by a drawing, the local radio supervisory personnel should coordinate with the Atlanta Communications Office to determine a standardized installation and detailed drawing of the agreed upon installation. The drawing will then be made a part of these radio instructions and distributed to all concerned.

SECTION IV - MARKINGS

E. STEEL HAND DIES AND HAND ENGRAVER

Steel hand dies in sets of letters and numerals should be ordered on a local basis. Two sizes of dies 1/4" and 3/32", should be on hand in all shops. These should be obtained on a local purchase.

An electric hand held engraver should be ordered on a local basis to hand engrave internal markings.

F. FASTENINGS

Normally engravings will be made directly to the equipment, but if required, the two methods of fastening identification plates to radio equipment normally used are:

1. Sheet Metal Screws:
No. 4 X 3/16" binding head, cadmium plated, sheet metal screws may be used where needed. Use a #43 drill for mounting holes for the above screws. Procurement of screws should be handled through normal purchasing channels.

2. Closed End Pop Rivets:
Normally two sizes of pop rivets will be stocked by each Radio Shop, USM Corporation's dome-head closed-end number:
AD42AH - 1/8" D by 1/8" maximum grip
(use #30 drill for mounting holes)
AD64AH - 3/16" D by 1/4" maximum grip
(use #11 drill for mounting holes)

USM pop rivets require an installation tool, part number PRG-402-HD. Installation tool will come with two standard mandrels (1/8" and 3/16"). If extra mandrels are required, they can be ordered by part number PRN-434 (1/8") or PRN-634 (3/16").

Above are stock items and can be obtained from the following supplier:

Atlanta Sheet Metal Corporation
799 Marietta Street, N. W.
Atlanta, GA. 30318
(Phone: 404-892-9902)

SECTION IV - MARKINGS

3. When plates are installed, plugs and/or screws should be weatherproofed through use of glyptol or similar sealant. Sealants should be applied carefully to assure a neat appearance.

4. There will be some occasions where RRID plates must be affixed to the radio set with epoxy type cements. Care should be taken to insure a good adhesion of plate to radio in order to prevent loss of the plate.

Director of Engineering
Communications Department

Atlanta, Georgia
File: 019-000b

RADIO INSTRUCTIONS MANUAL

DRAWING NUMBER	TITLE
RD 400	INDEX - 400 GROUP
RD 401	"C" NUMBER RADIOS
RD 402	"T[f] NUMBER RADIOS
RD 403	•H\ "N" & "P[1] NUMBER RADIOS
RD 404	•S" NUMBER RADIOS AND "D" NUMBER RADIOS
RD 405	ID PLATE -GENERAL - BLANK
RD 415	PLATE, ENGRAVING - MICOR
RD 417	NUMBER TAG FOR ENGINE &' CABOOSE POOL
RD 418	CHANNEL PLATE - PAINTING - YARD ENGINE
RD 420	HANDSET ENGRAVING
RD 421	PLATE, CONCEALED ID - MICOR
RD 422	PLATE, CONCEALED ID - MOTRAN
RD 423	**PLATE, CONCEALED ID - MICOR**
RD 424	CONTROL HEAD ENGRAVING - MOBILE
RD 425	PLATE, CONCEALED ID - IND. DISPATCHER
RD 426	PLATE, ENGRAVING -HT200
RD 427	PLATE, ENGRAVING, CONCEALED ID - PT. TYPE
RD 428	PLATE, ENGRAVING, CONCEALED ID -HT220
RD 429	LABEL, ENGRAVING - MX SERIES
RD 430	CONCEALED ID - MX SERIES
RD 431	ENGRAVING - MX SERIES CONVERTA - COM CONSOLE
RD 432	MACHINE BOX CARD HOLDER

RADIO INSTRUCTIONS MANUAL

DRAWING NUMBER	TITLE
RD 433	ENGRAVING & CONCEALED ID DATA - MT 500 SER. RR ID.
RD 434	PLATE, CARD HOLDER, CONCEALED ID. - MITREK SER.
RD 435	ID. PLATE - CLEAN CAB SYNTOR RADIO
RD 436	PLATE, CONCEALED ID -ON HARMON BASE STATION
RD 437	PLATE, CONCEALED ID - MOTOROLA SYNTOR AAR MOUNT
RD 438	PLATE, CONCEALED ID. - MOTOROLA MCX 100 RR
RD 439	PLATE, CONCEALED ID - MAXAR
RD 440	PLATE, CONCEALED ID - RF LINK - REPCO
RD 441	ENGRAVING FOR MCX 100 AND MCX 1000
RD 442	ENGRAVING FOR HT600
RD 443	ENGRAVING FOR MTIOOO
RD 444	ENGRAVING FOR EXPO
RD 445	ENGRAVING FOR MSR2000 (WILL BE SENT OUT SOON)
RD 446	ENGRAVING - MAX TRAC 50
RD 447	ENGRAVING - R. F. LINK

LEGEND

HS - HAND STAMP
PN - PRE NUMBERED
NA - NOT APPLICABLE

TYPE RADIO	MARKING & INSTALLATION INFORMATION		
	INSTAL-LATION DRAWING	INTERNAL DRAWING	SPECIAL ENGRAVING DRAWING
AAR BASE MOTRAN	RD 422	RD 422	NA
AAR BASE MICOR	RD 421	RD 421	NA
CONSOLETTE BASE	——	——	**NA**
AAR MOBILE-MOTRAN	RD422	RD422	NA
AAR MOBILE-MICOR	RD421	RD421	NA
INDUSTRIAL DISPATCHER	RD 425	RD 425	NA
MOTRAC-REAR OR FRONT MOUNT	RD 422	RD 422	NA
MOTRAN-REAR OR FRONT MOUNT	RD422	RD422	NA
MICOR-REAR OR FRONT MOUNT	RD423	RD423	RD424
MCX 100 REAR OR FRONT MOUNT	**RD 441**	**RD 441**	**RD 441**
MCX 1000 REAR OR FRONT MOUNT	**RD 441**	RD441	RD441
MSR 2000	RD445	RD445	**NA**
MAXTRAC	RD446	RD446	NA
REPEATERS - *R* NUMBERS. RECEIVER ONLY AND TRANSMIT ONLY UNITS WILL USE STANDARD 'R[1] NUMBER, PLATE RD 405 HAND STAMPED.			

NORFOLK SOUTHERN

COMMUNICATIONS DEPARTMENT

't" NUMBERED RADIOS

ENGINEER!	APPROVED*	DRAWING NO.
A.F.C.	D.E.B.	RD 401
DRAWN: R.B.D.	DATEJ 7-15-8S	

LEGEND

HS - HAND STAMP
PN - PRE NUMBERED
NA - NOT APPLICABLE

MARKING & INSTALLATION INFORMATION

TYPE RADIO	INSTAL-LATION DRAWING	INTERNAL DRAWING	SPECIAL ENGRAVING DRAWING
•T' RACK MOTRAN-ROAD	RD417	RD 422	RD417
•T" RACK MICOR-ROAD	RD415	RD 421	RD415
"T" RACK MOTRAN-YARD	RD417	RD 422	RD 417 RD 418
"T" RACK MICOR-YARD	RD415	RD 421	RD 415 RD 418
"AAR[g] MOTRAN-LOCOTROL	RD422	RD 422	NA
•AAR" MICOR-LOCOTROL	RD421	RD 421	NA
SYNTOR - CLEAN CAB	RD435	RD 435	RD 435
MCX100RR	RD438	RD 438	NA
NOTE i SPECIAL HANDSET INSTRUCTIONS SHOWN ON RD 41<* & RD 420.			

NORFOLK SOUTHERN

COMMUNICATIONS DEPARTMENT

•T' NUMBER RADIOS

^ A.F.C.	APPROVED! D£.B.	DRAWING NO. RD 402
" ^ R.B.D.	DATE. 7-15-8S	

LEGEND

HS - HAND STAMP
PN - PRE NUMBERED
NA - NOT APPLICABLE

MARKING & INSTALLATION INFORMATION

TYPE RADIO	INSTAL-LATION DRAWING	INTERNAL DRAWING	SPECIAL ENGRAVING DRAWING
HT-200	RD 426		RD 426
HT-220	RD 428	RD 428	RD 428
PT-200, 300. 500	RD 427	RD 427	RD 427
RED HT-220 (DIV. UNIT)	RD 428	RD 428	RD 428
RED PT-220 (DIV. UNIT)	RD 427	RD 427	RD 427
MX SERIES	RD 42S	RD 430	RD 42S
HT 600	RD 442	RD 442	RD 442
MT 1000	RD 443	RD 443	RD 443
EXPO	RD 444	RD 444	RD 444

NORFOLK SOUTHERN

COMMUNICATIONS DEPARTMENT

•HVN[B] & "P" NUMBERED RADIOS

ENGINEER:	APPROVED:	DRAWING NO.
ft.F.C.	D.E.B.	RD 403
DRAWN: R.B.O.	DATEi 7-15-8S	

LEGEND

HS - HAND STAMP
PN - PRE NUMBERED
NA - NOT APPLICABLE

INSTALLATION INFORMATION

TYPE RADIO	INSTALLATION DRAWING	INTERNAL DRAWING	SPECIAL ENGRAVING DRAWING
"S" NUMBER			
SPEEDMETERS-PORTABLE	—	—	—
SPEEDMETER-YARD	—	—	—
"D* NUMBER			
HT-220 TX ONLY	RD 428	RD 428	RD 428
MX-SERIES TX ONLY	RD 429	RD 429	RD 429
MAXAR	RD 439	RD 439	RD 439
RF LINK	RD 440	RD 440	RD 440

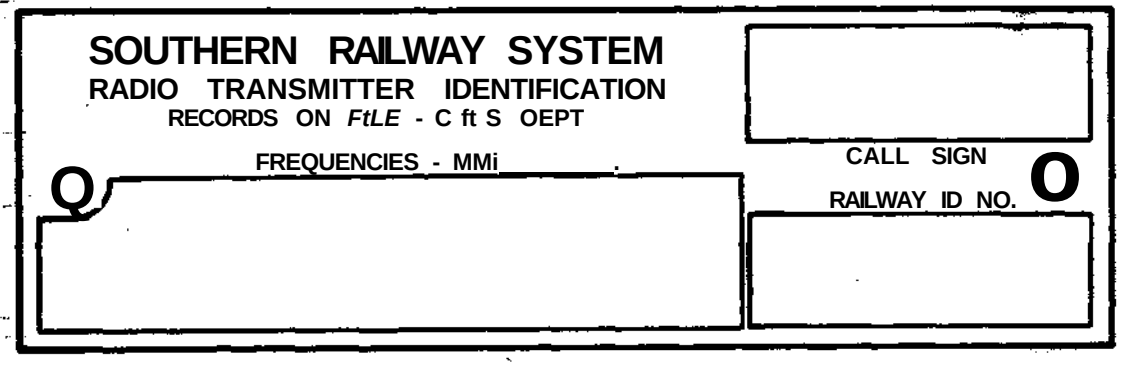
SSSSSSSSSSSSSS^kMUBENORFOLK SSSSsMWmJt8OUTHERN

COMMUNICATIONS DEPARTMENT

•S" NUMBERED UNITS AND
•D- NUMBERED UNITS

ENGI^ER:	APPROVED*	ORAWING NO.
A.F.C.	D.E.B.	RD 404
DRAWN: R.B.D.	OATE: 7-15-89	

PLATE SHOWN IS TWICE NORMAL SIZE



FREQUENCIES: BLANK (HAND STAMP)
CALL SIGN : BLANK (HAND STAMP)
RR ID NO. : BLANK (HAND STAMP)

TO BE USED:

TO REPLACE DESTROYED OR DAMAGED PLATES
FOR SPECIAL APPLICATION

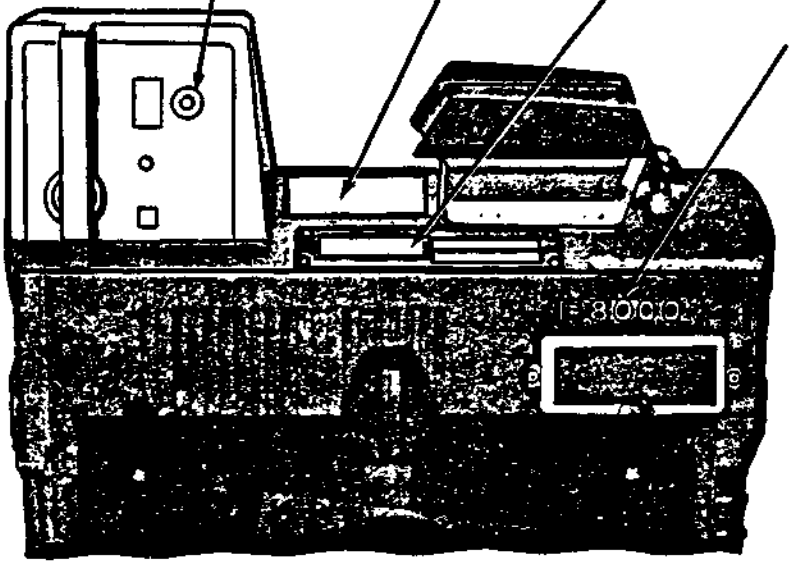
NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
IDENTIFICATION PLATE BLANK - FOR GENERAL PURPOSE	ENGINEER: A.F.C.	APPROVED: D.E.B.	DRAWING NO. RD 405
	DRAWN! R.B.D.	DATEi 7-15-8S	

MOTE: ON NEW ROAD SETS (REVERTING UNITST, FREQUENCY KNOB MUST BE REMOVED AND STANDARD SHAFT LOCK INSTALLED LOCKED TO F-2.

YARD CHANNEL PLATE (YARD RADIOS)

R.R. IDENTIFICATION PLATE

RAILROAD RADIO SET HO.
3/8" HIGH LETTERS fCNGRAVED)

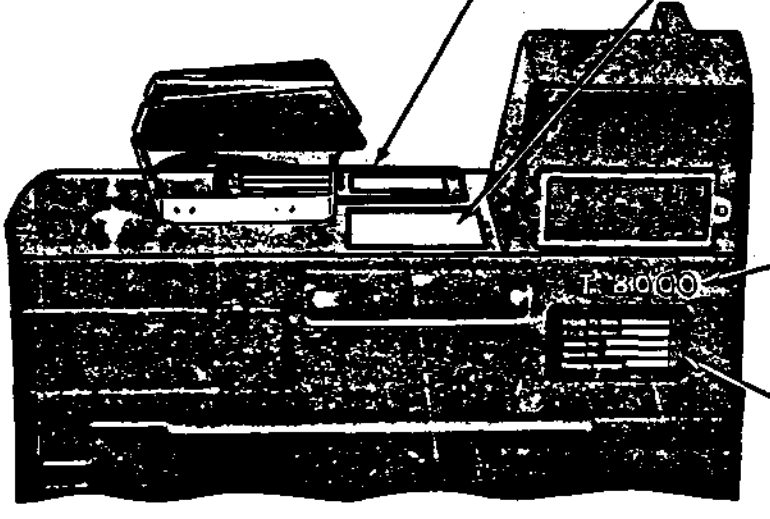


FRONT OF RADIO

R.R. IDENTIFICATION PLATE

BACK OF RADIO

YARD CHANNEL PLATE (YARD RADIOS)



RAILROAD RADIO SET NO.
3/8" HIGH LETTERS
(ENGRAVED)

ENGRAVINGS WILL INDICATE SOU RWY OR N&W RWY DEPENDING ON ACCTG.

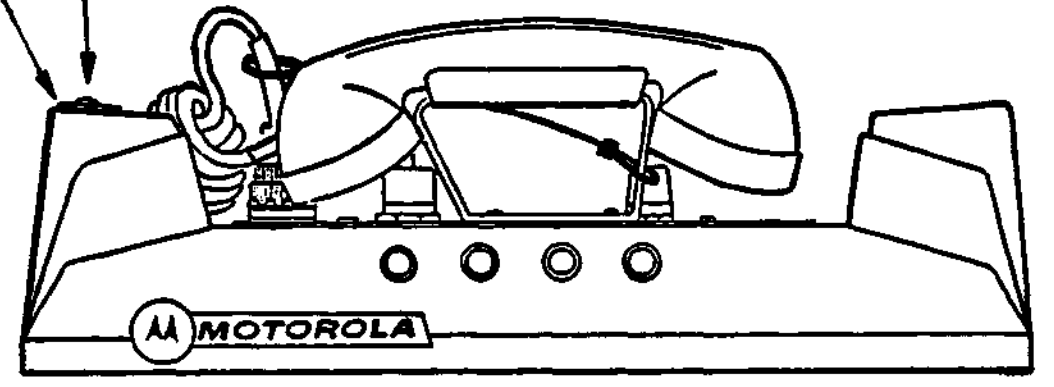
MOTOROLA'S
IDENTIFICATION PLATE

NOTE: CONCEALED ID MARKINGS LOCATION SHOWN ON RD-421

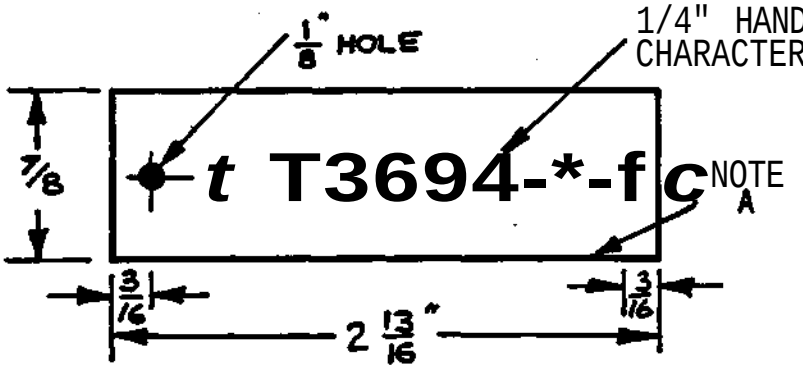
NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
PLATE ENGRAVING INFORMATION ON MICOR RADIOS	ENGINEER! A.F.C.	APPROVEOi D.E.E.	DRAWING NO. RD 415
	DRAWN: R.B.D.	OATEI 7-15-8S	

-**INSTALL PLATE ALONG** OUTER ED6E OF SPEAKER HOUSING NEAREST HANDSET RECEPTACLE, ORIENTED SO **THAT BOTTOM** OF NUMERALS ARE TOWARD FRONT EDGE OF SPEAKER HOUSING.

NOTE A



YARD RADIO TO BE PAINTED ORANGE OR RED WITH PLATE INDICATING YARD a CHANNELS MOUNTED ON TOP OF RADIO BETWEEN VOLUME a FREO. KNOB.

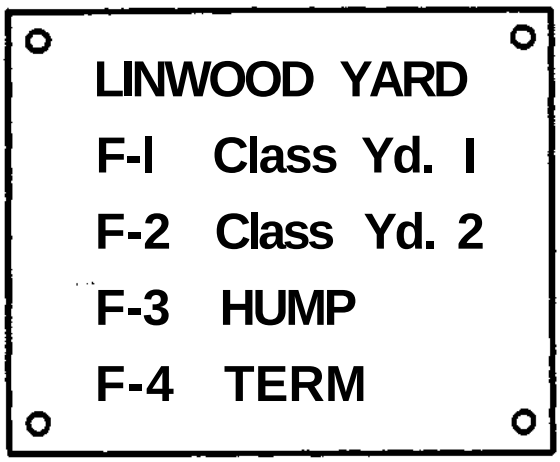


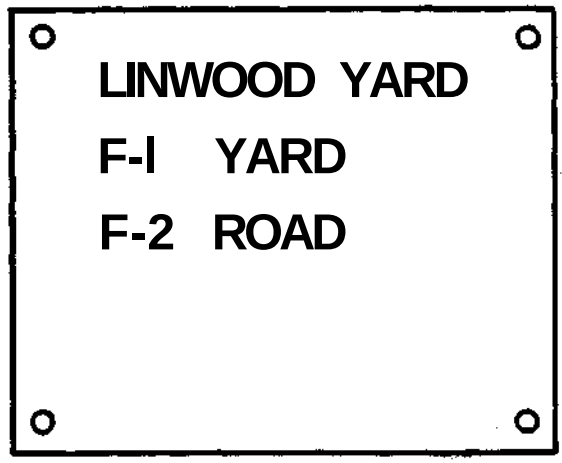
BLANK ALUMINUM PLATE (NOTE B)

MOUNT TO RADIO WITH 1/8" POP RIVETS

NOTE: A. THIS EDGE TO BE ALONG FRONT EDGE OF SPEAKER HOUSING.
B. USE BACKSIDE OF STANDARD BLANK ID PLATE RD-405.
C. THIS PLATE IS NOT NEEDED ON MICOR OR RADIOS WITH NUMBER ENGRAVED ON CONTROL HEAD.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
NUMBER TAG FOR ENGINE & CABOOSE POOL RADIOS	ENGDCEft A.F.C.	APPROVED! D.E.B.	DRAWING NO. RD 417
	DRAWN: R.B.D.	OATEt 7-15-89	





CONTROL HEAD ON YARD RADIOS MUST BE PAINTED RED OR ORANGE, HAVE SHOP CODE AND "YD SVC ONLY" STENCILLED AND ALSO HAVE A SPECIAL PLATE INDICATING CHANNELS.

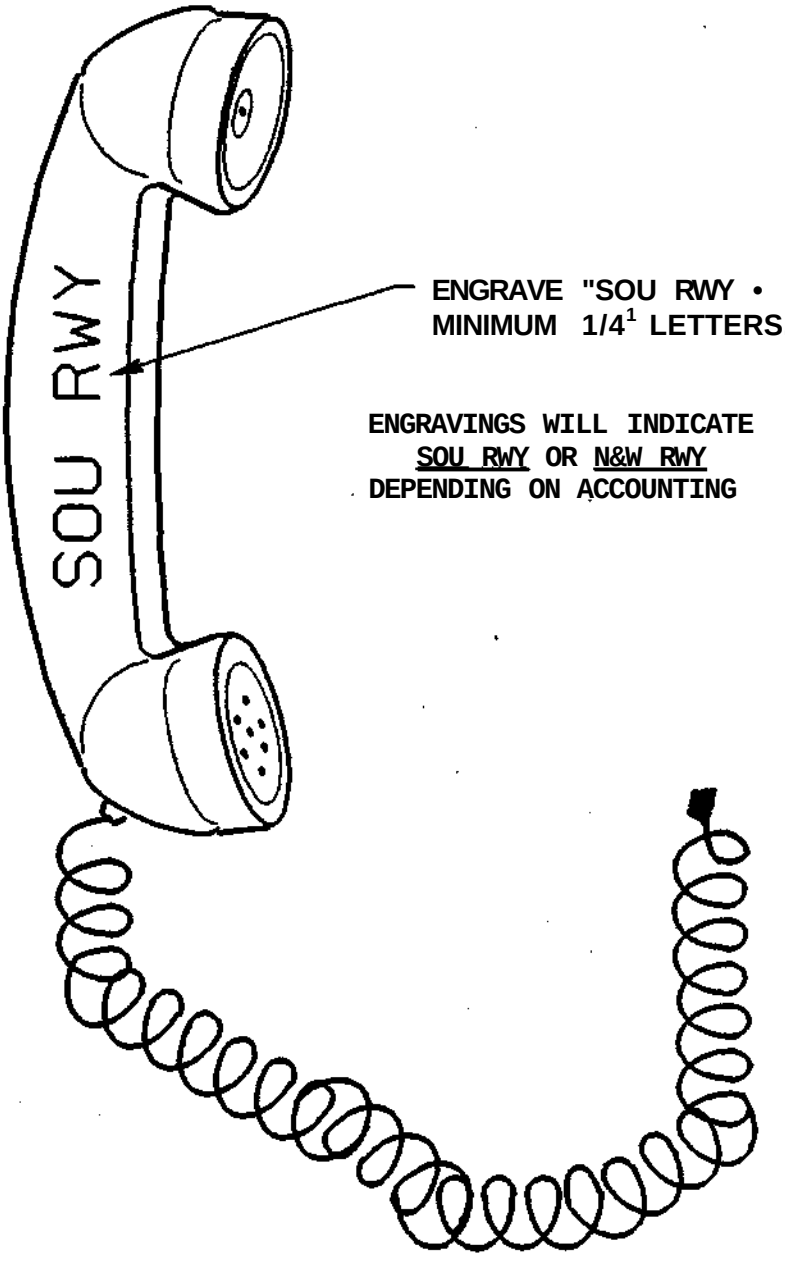
SPECIAL CHANNEL PLATE INFORMATION AS FOLLOWS:

A. PLATES TO BE SIZED TO FIT ON CONTROL HEAD ADJACENT TO HAND SET HOLDER, BUT NOT LESS THAN 2V X 2".

B. PLATE IS TO BE CUT FROM 1/8" THICK BLANK ALUMINUM PANEL.

C. ENGRAVINGS ARE NOT TO BE LESS THAN 3/16" HIGH,.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
CHANNEL PLATE - PAINTING YARD ENGINE RADIOS	ENGINEER: A.F.C.	APPROVED: D£.B.	DRAWING NO. RD 418
	DRAWN: R.B.D.	DATE: 7-15-83	



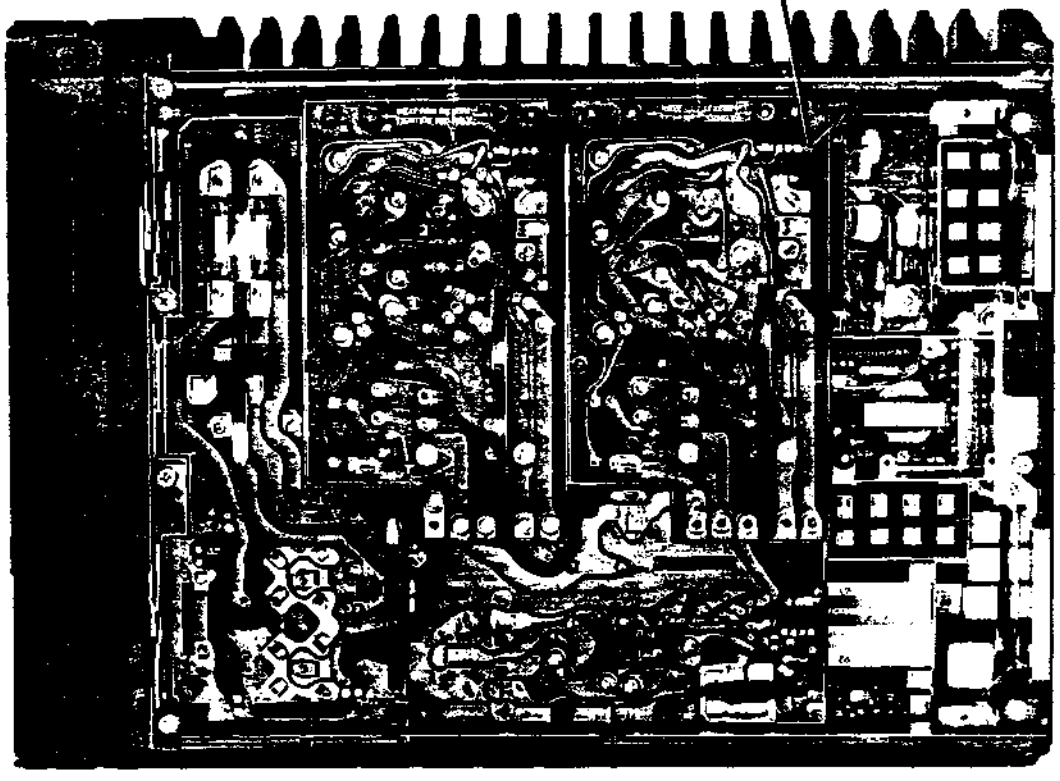
ENGRAVE "SOU RWY • MINIMUM 1/4[1] LETTERS.

ENGRAVINGS WILL INDICATE
SOU RWY OR N&W RWY
DEPENDING ON ACCOUNTING

ENGRAVE ON ALL ENGINE/CABOOSE STYLE HANDSETS.

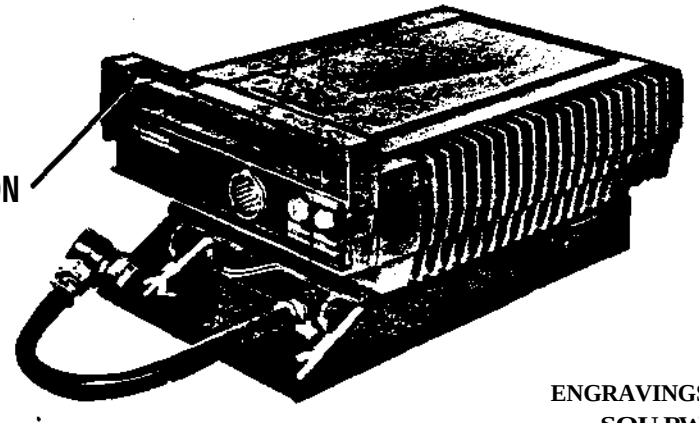
NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
HANDSET ENGRAVING	ENGINEER: A.F.C.	APPROVED: D£.B.	DRAWING NO. RD 420
	DRAWN: R.B.O.	DATE: 7-15-89	

ENGRAVE CONCEALED IDENTIFICATION
ON INSIDE EDGE OF HEAT SINK.



BOTTOM
VIEW

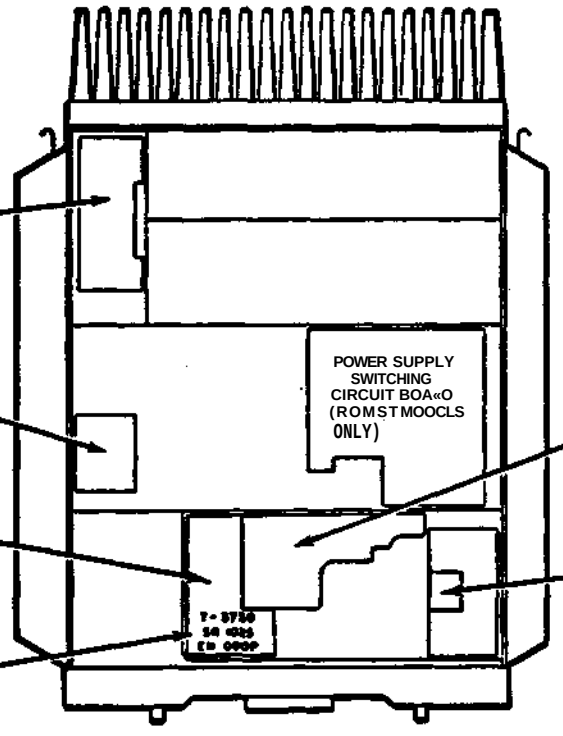
R.R.
IDENTIFICATION
PLATE



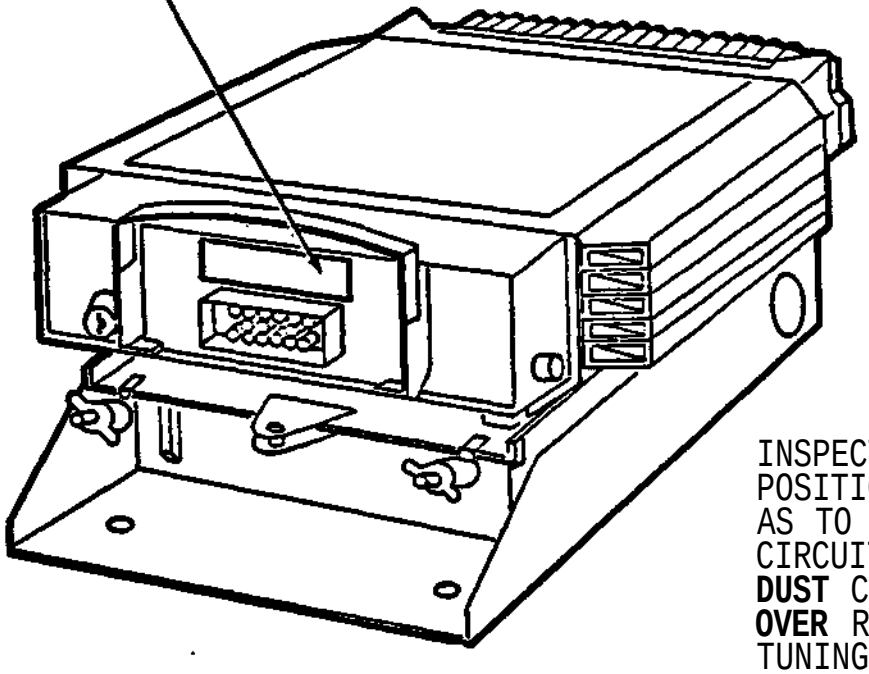
ENGRAVINGS WILL INDICATE
SOU RWY OR N&W RWY
DEPENDING ON ACCOUNTING

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
INSTALLATION - PLATE AND CONCEALED ID ON MICOR RADIO	ENGINEER: A.F.C.	APPROVEDi D.E.B.	DRAWING NO. RD 421
	DRAWN: R.B.D.	OATEi 7-15-89	

MOTRAC - MOTRAN



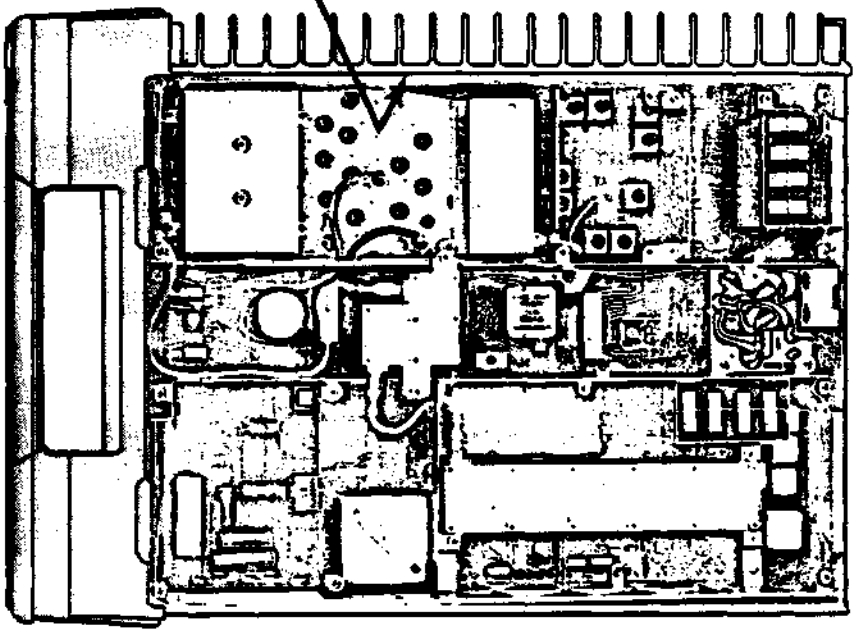
ENGRAVINGS WILL INDICATE
SOURWY OR N&WRVY
DEPENDING ON ACCOUNTING



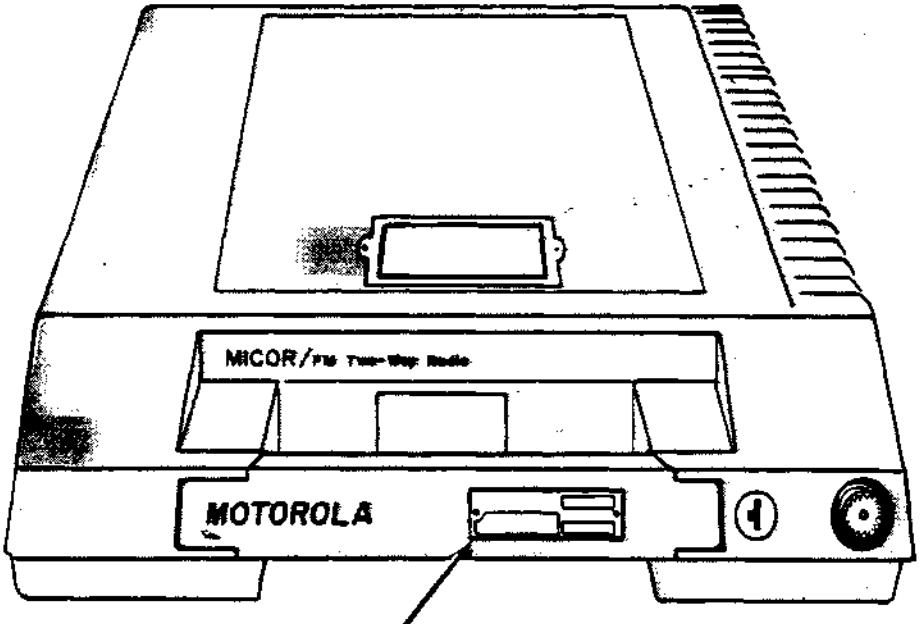
INSPECTION CARD HOLDER POSITION CAREFULLY AS TO NOT SHORT OUT ANY CIRCUITY UNDER TOP **DUST** COVER. (SHOULD BE **OVER** RECEIVER RF TUNING SECTION).

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
PLATE, CONCEALED ID ON MOTRAN RADIO	ENGINEER: A.F.C.	APPROVED! D£.B.	DRAWING NO. RD422
	ORAWfc R.B.D.	DATE! 7-15-89	

ENGRAVE ON INSIDE E06E OF HEAT SINK.



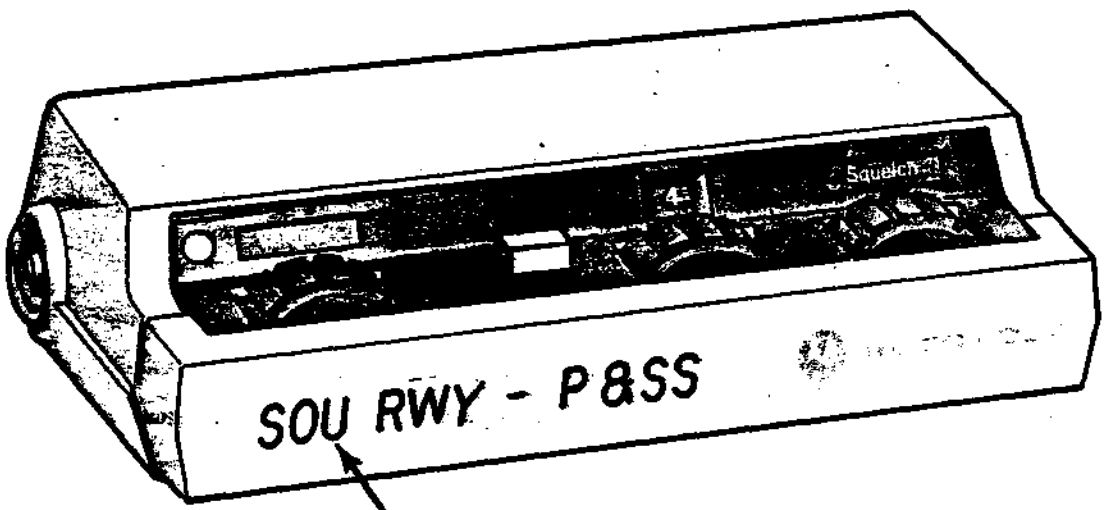
BOTH* VIEW



R. R. IDENTIFICATION PLATE

ENGRAVINGS WILL INDICATE SOU RWY OS N&W RWY DEPENDING ON ACCTG.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
PLATE, CONCEALED ID ON MICOR RADIO	ENGINEER: A.F.C.	APPROVED! D£.B.	DRAWING NO. RD 423
	DRAWN: R.B.D.	OATEi 7-15-8^	

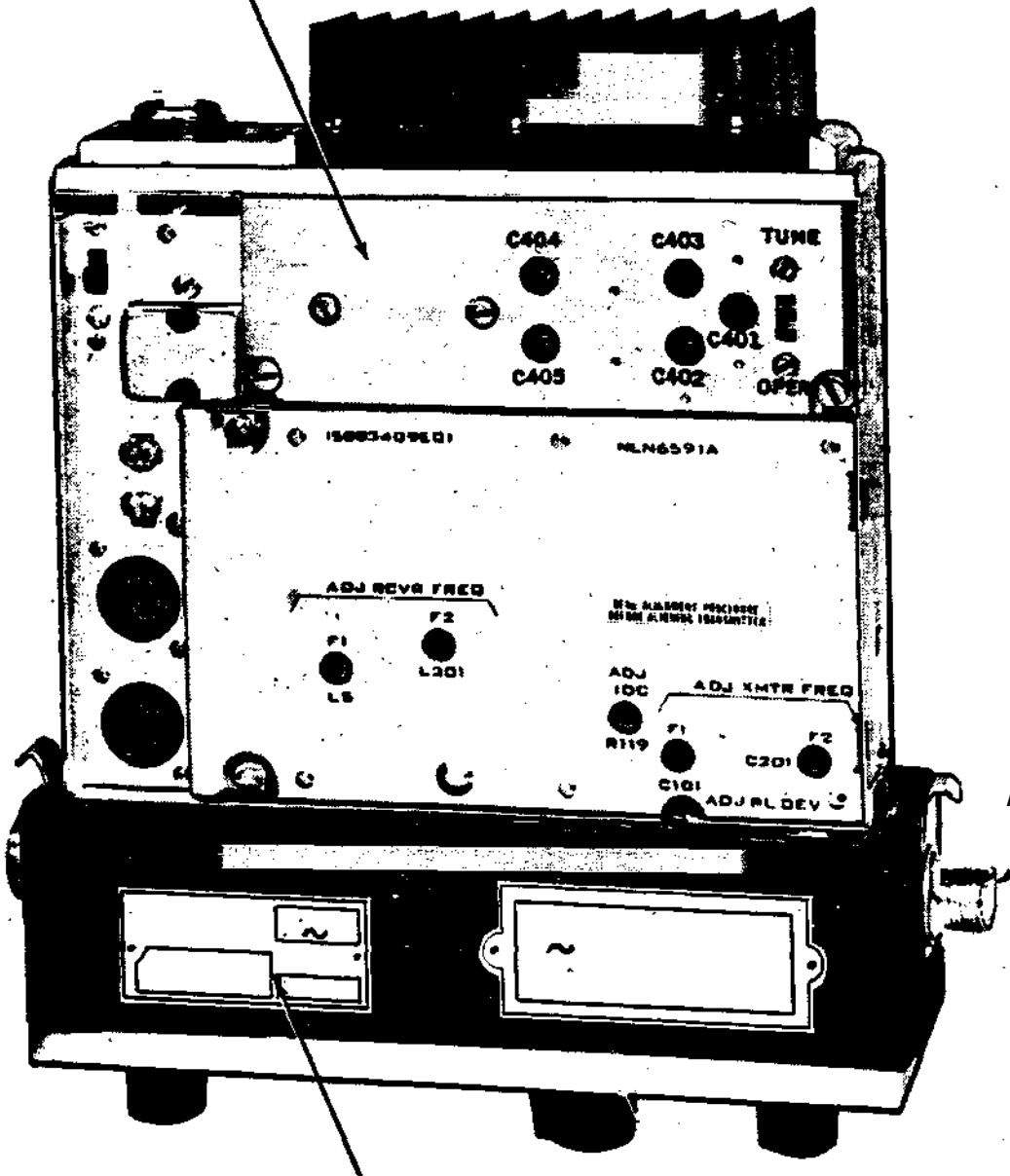


ENGRAVE 1/4" HIGH LETTER
IN THIS AREA.

ENGRAVINGS WILL INDICATE
SOU RWY OR N&W RWY
DEPENDING ON ACCOUNTING

NS SSSSfe*N	COMMUNICATIONS DEPARTMENT		
MICOR CONTROL HEAD ENGRAVING	ENGINEER: A.F.C.	APPROVED: D.E.B.	DRAWING NO. RD 424
	DRAWN: R.B.D.	DATE: 7-15-8S	

•INTERNAL ENGRAVING ON RF COVER PLATE IN THIS AREA

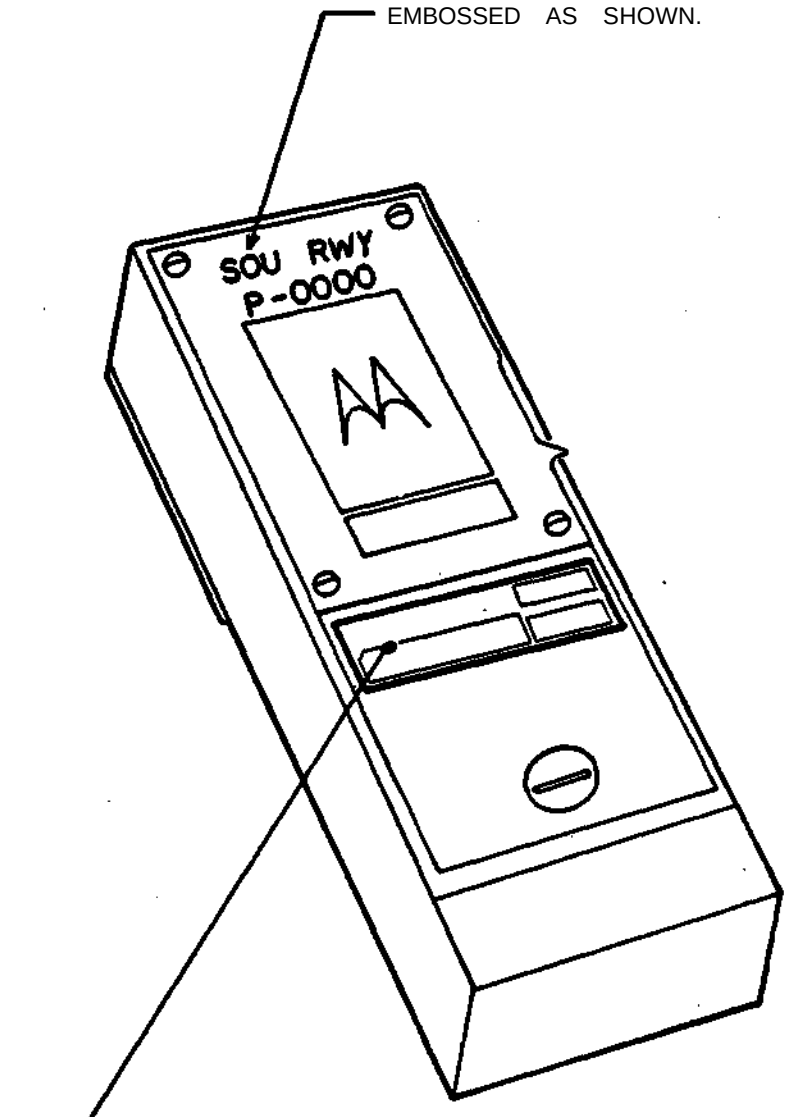


ANTENNA CONNECTOR

RR IDENTIFICATION PLATE

ENGRAVINGS WILL INDICATE SOU RWY OR N&W RWY DEPENDING ON ACCOUNTING

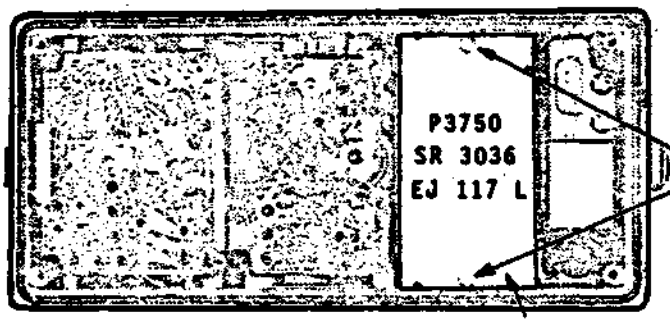
NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
PLATE, CONCEALED ID ON INDUSTRIAL DISPATCHER	ENGINEER: A.F.C.	flPPROVEDi D£.B.	DRAWING NO. RD 425
	DRAWN) R.B.D.	DATE: 7-15-89	



ENGRAVINGS WILL INDICATE
SOU RWY OR N&W RWY
DEPENDING ON ACCOUNTING

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
HT200 SERIES H INSTALLATION DATA	ENGINEER: A.F.C.	APPHOVEOi D.E.B.	DRAWING NO. RD 426
	DRAWN: R.B.D.	DATE. 7-15-8S	

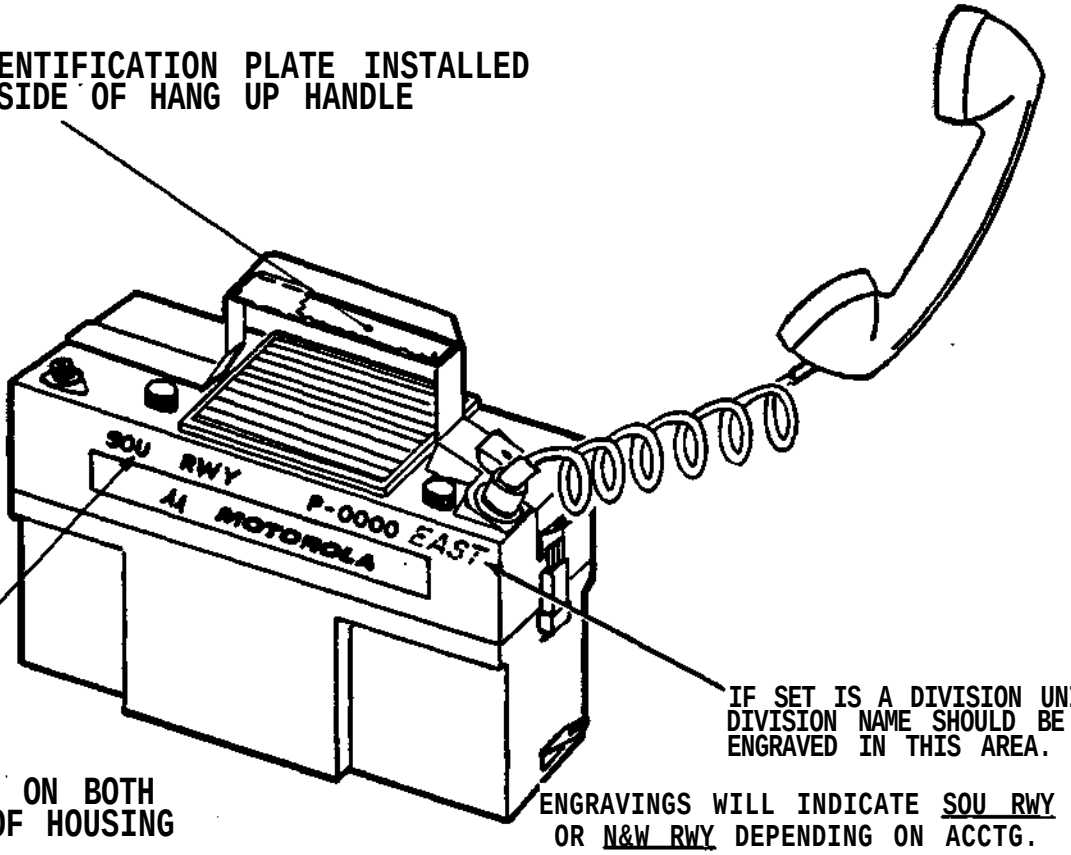
PT TYPE HANDIE-TALKIE



ENGRAVE ID NUMBER AND SERIAL NUMltS AS INDICATED)

POWER AMPLIFIER DUMMY PLATE

IDENTIFICATION PLATE INSTALLED INSIDE OF HANG UP HANDLE



IF SET IS A DIVISION UNIT DIVISION NAME SHOULD BE ENGRAVED IN THIS AREA.

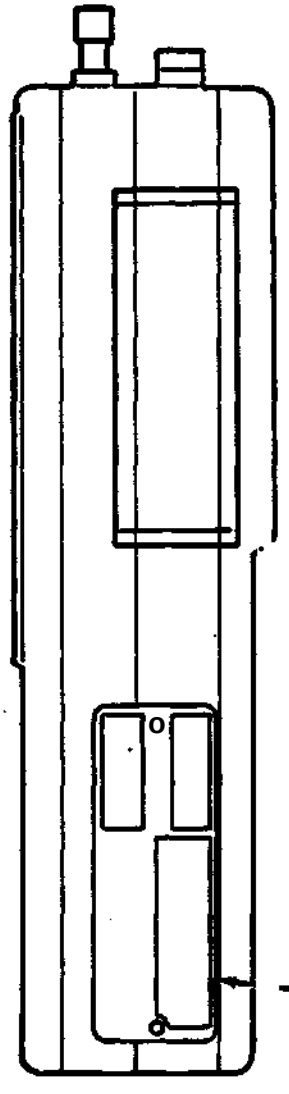
ENGRAVE ON BOTH SIDES OF HOUSING

ENGRAVINGS WILL INDICATE SOU RWY OR N&W RWY DEPENDING ON ACCTG.

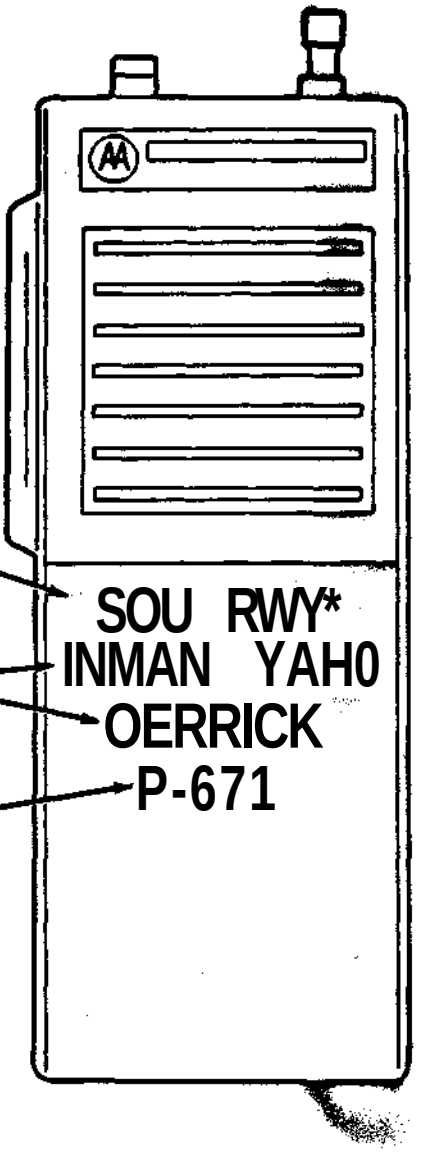
NOTES

1. DRILL HOLES IN IDENTIFICATION PLATE SO IT NAY BE MOUNTED ON TOP OF MFGRS. NANEPLATE - USING SANE SCREWS.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
PLATE, ENGRAVING, CONCEALED ID ON PT TYPE RADIO	ENGINEER: A.F.C.	flPmWEDi D.E.B.	DRAWING NO. RD 427
	DRAWN: R.B.D.	DATE. 7-15-89	



NOTE:
ALL ENGRAVINGS TO BE 1/4" HIGH ANO FILLED WITH WHITE PAINT STICK



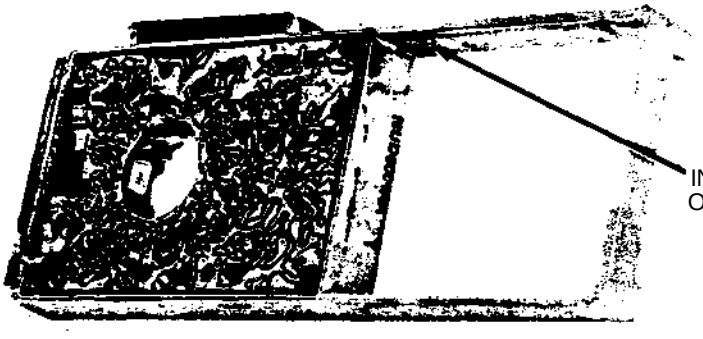
LICENSEE'S NAME (ENGRAVED)

DEPARTMENT, TYPE SERVICE AND/OR TYPE SERVICE (ENGRAVED)

RAILROAD I.D. SET NUMBER (ENGRAVED)

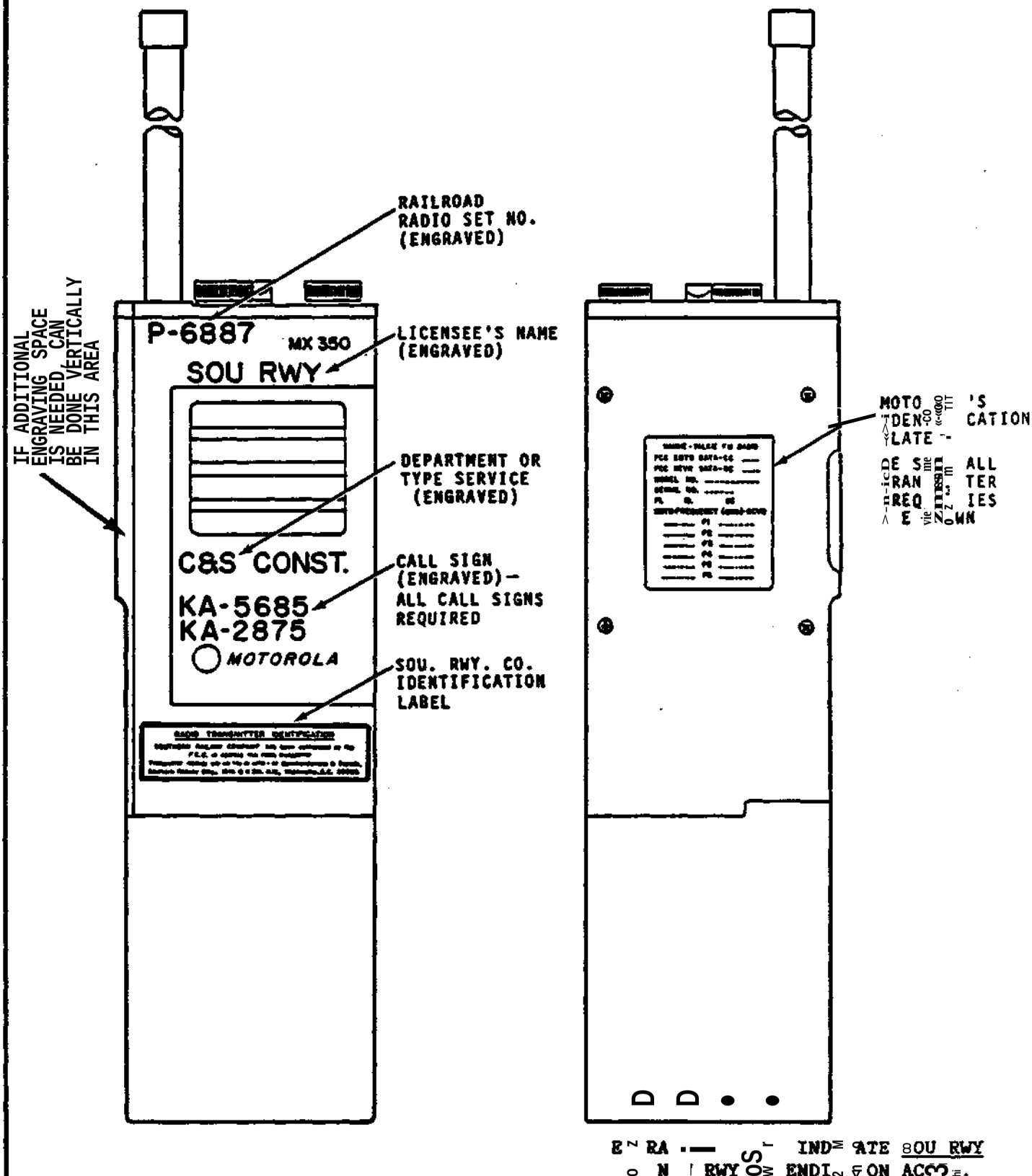
RR IDENTIFICATION PLATE (PLASTIC MUST BE CUT DOWN TO ALLOW PLATE TO MOUNT FLAT)

ENGRAVINGS WILL INDICATf
SOU RVHf OR N&W RWY
DEPENDING ON ACCOUNTING



INTERNAL ENGRAVING ON SIDE IN THIS AREA

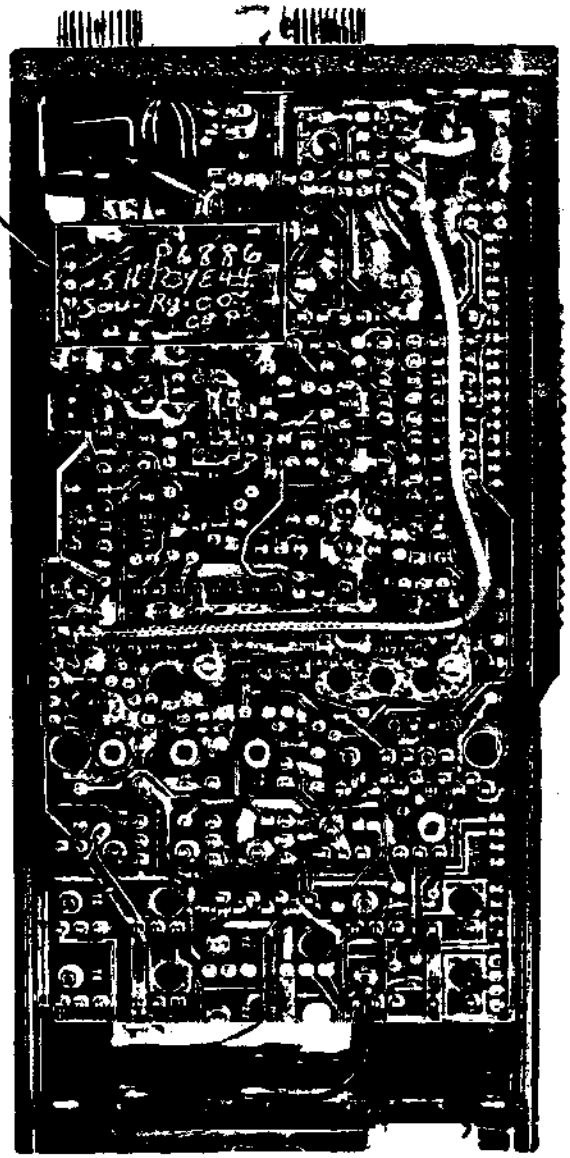
NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
PLATE, ENGRAVING, CONCEALED ID ON HT220 SERIES	ENGINEER: A.F.C.	flPPROVEIh D.E.B.	DRAWING NO. RD 428
	DRAWN: R.B.D.	DATEi 7-15-89	



ALL ENGRAVED LETTERING TO BE 7/32" HIGH

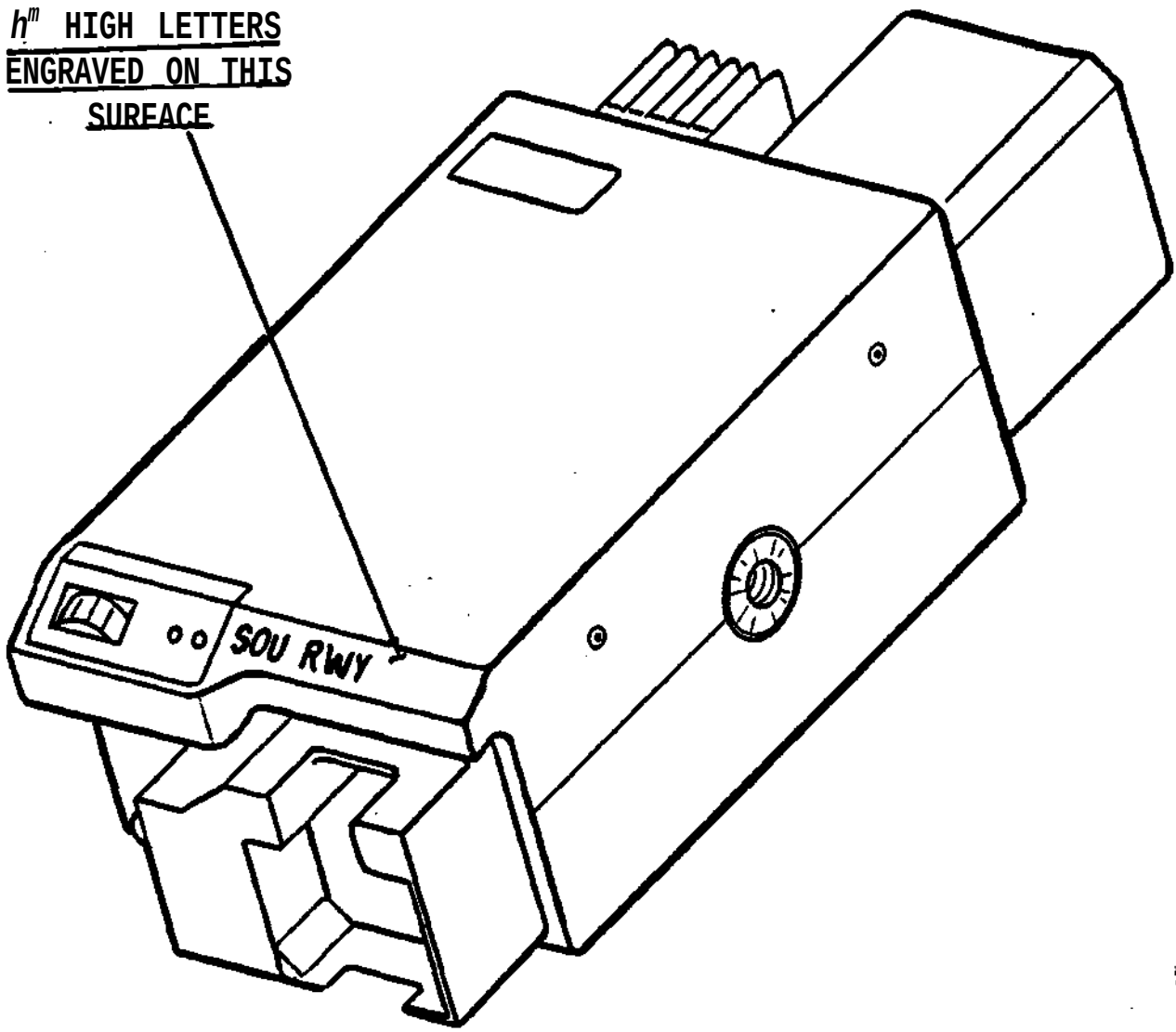
NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
LAYOUT, RADIO MOUNTING SYSTEM	ENGINEER: A.F.	APPROVED: A.E.S.	DRG. NO. 30 4 08
	DRAWN: R.B.D.	DATE: 7-1-8	

INTERNAL ENGRAVING ON
P/C BOARD IN THIS AREA



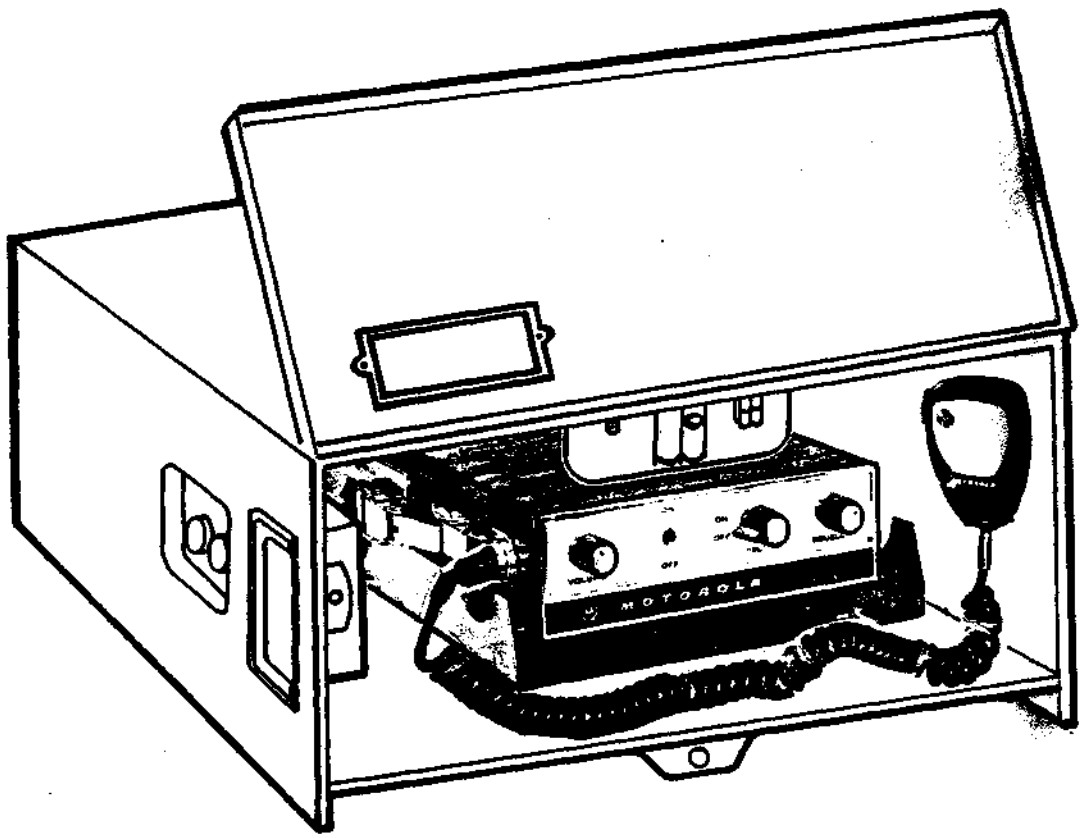
ENGRAVINGS WILL INDICATE
SOU RWY OR N&W RWY
DEPENDING ON ACCOUNTING

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
CONCEALED IDENTIFICATION ON MX300 SERIES	ENGINEER! A.F.C.	APPROVED* D.E.B.	DRAWING NO. RD 430
	DRAWN: R.B.O.	OATEi 7-15-89	



ENGRAVINGS WILL INDICATE
SOU RWY OR N&W RWY
DEPENDING ON ACCOUNTING

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
ENGRAVING FOR MX SERIES CONVERTA-COM CONSOLE	ENGINEER! A.F.C.	OPPfIOVEDi D.E.B.	DRAWING NO. RD 431
	DRAWN: R.B.D.	DfITEt 7-15-89	



NOTES :

1. IF RADIO HAS FLOATING INPUT, NO STENCIL IS REQUIRED.
2. IF RADIO REQUIRES GROUNDING, STENCIL EITHER •POSITIVE GROUND" OR "NEGATIVE GROUND" ON INSIDE COVER AND ALSO ON OUTSIDE OF COVER NEAR POWER PLUG.
3. BE SURE RRID CAN BE SEEN OR IS NOTED ON CORNER.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
MACHINE BOX CARD HOLDER	ENGINEER: A.F.C.	APPROVED: D£.B.	DRAWING NO. RD 432
	DRAWN: R.B.D.	DATEi 7-15-8<*	

(1) — INTERNAL ENGRAVING IN BATTERY COMPARTMENT IN THIS AREA. ID NO., SERIAL NO.

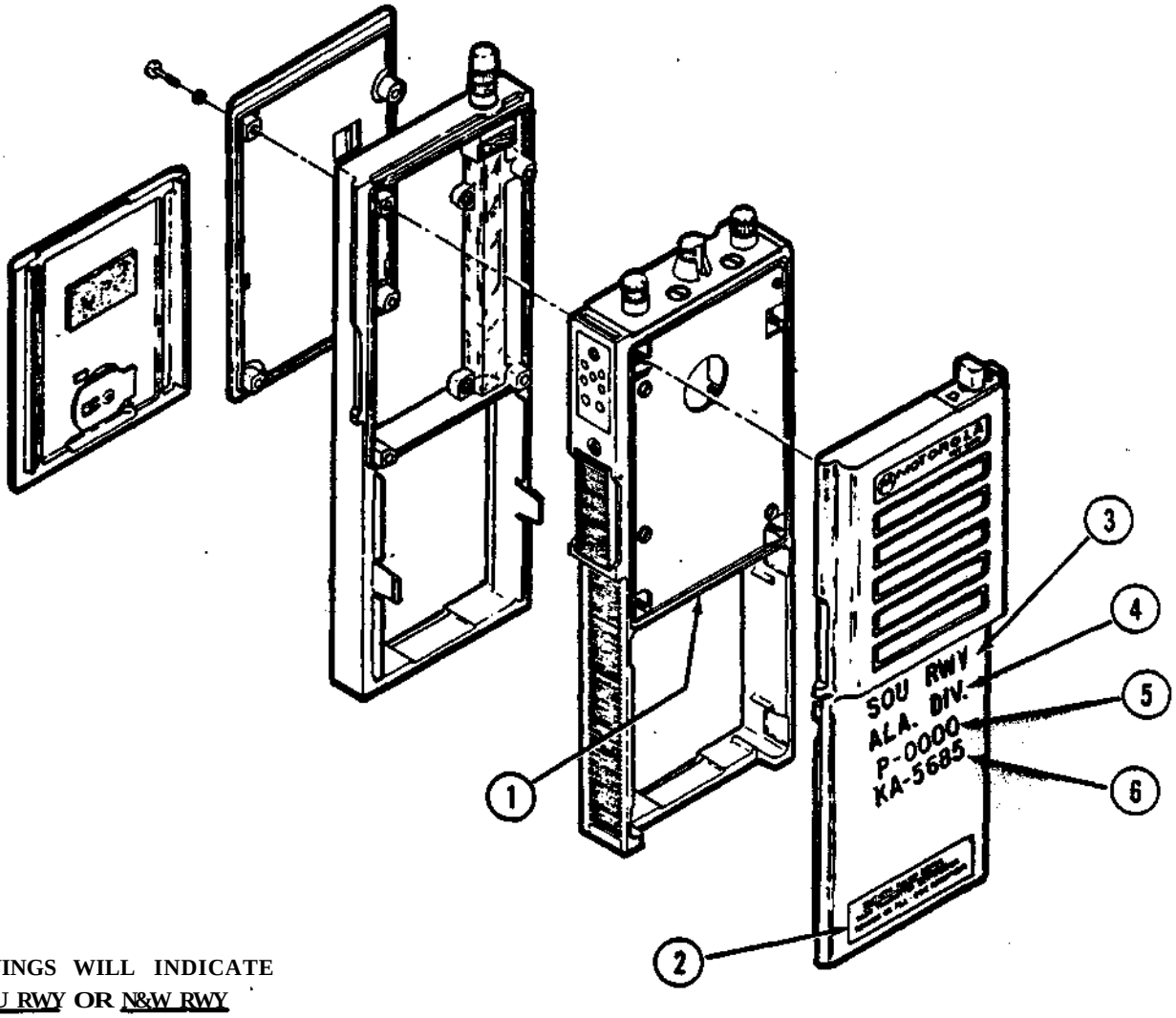
(2) — SOUTHERN RAILWAY IDENTIFICATION LABEL RD-414

(3) — LICENSEE'S NAME (ENGRAVED)

(4) — DEPARTMENT OR TYPE SERVICE (ENGRAVED)

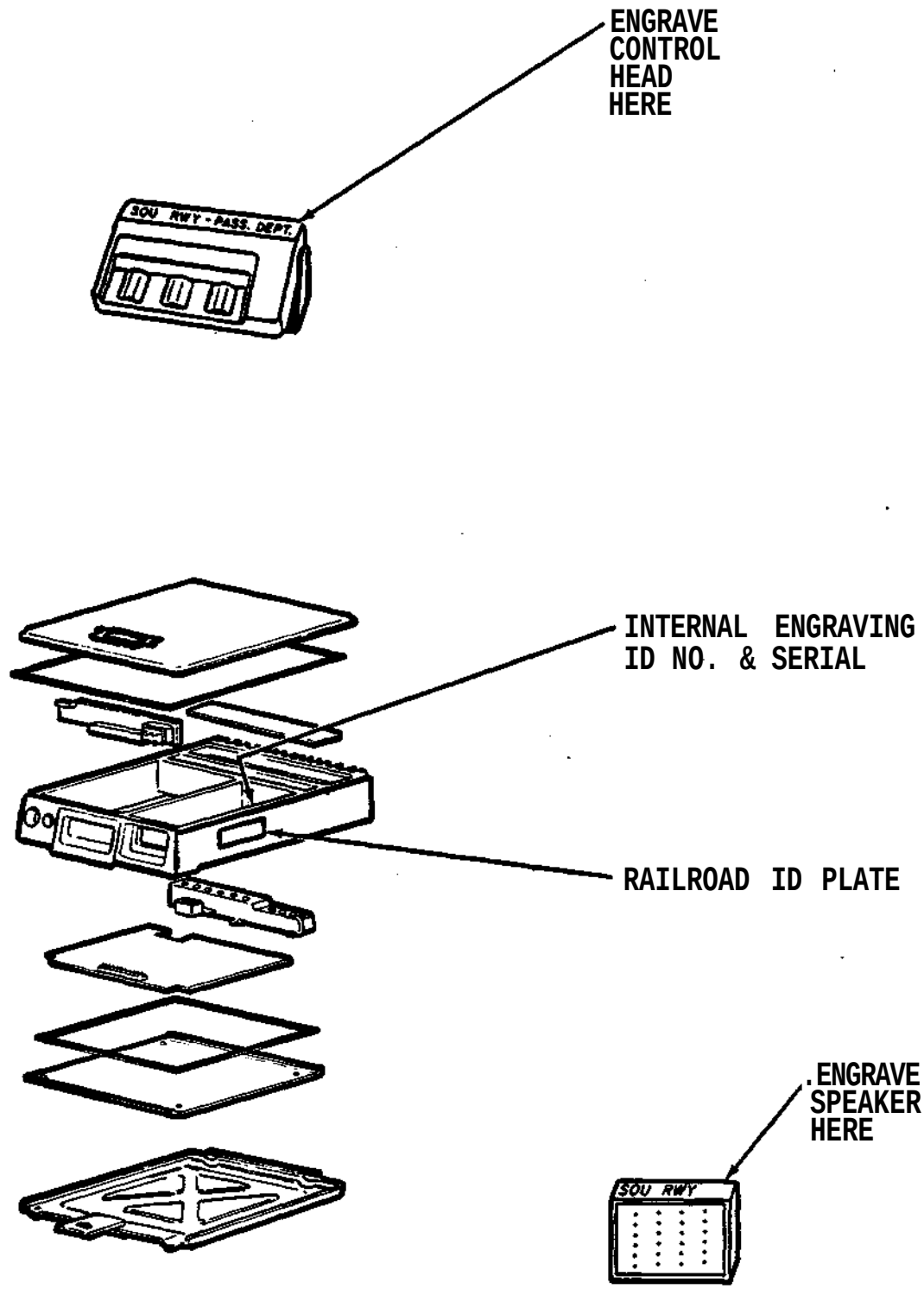
(5) — RAILROAD ID NO. (ENGRAVED)

(6) — CALL SIGN (ENGRAVED) NOTE-ALL CALL SIGNS COVERING REQUIRED.



BNGRAVINGS WILL INDICATE
SOU RWY OR N&W RWY
DEPENDING ON ACCOUNTING

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
ENGRAVING, CONCEALED ID DATA ON MT500 SERIES	ENGINEER: A.F.C.	APPROVEOt D.E.B.	DRAWING NO. RD 433
	ORAWNt R.B.D.	DATEi 7-15-89	



ENGRAVINGS WILL INDICATE SOU RWY OR N&W RWY DEPENDING ON ACCTG.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
PLATE. CARD HOLDER, CONCEALED ID AND CONTROL HEAD ENGRAVING 0NJ4TCREK SERIES	ENGINEER: A.F.C.	APPROVED! D.E.B.	DRAWING NO. RD 434
	DRAWN: R.B.D.	DATE: 7-15-8<J	

NOTE:

YARD UNITS WILL BE ENGRAVED

SOU. RY. CO. T-0000
INMAN YARD

RAILROAD IDENTIFICATION NO.
3/8" HIGH LETTERS (ENGRAVED)

2 HOLES-#40 (1/16") DRILL

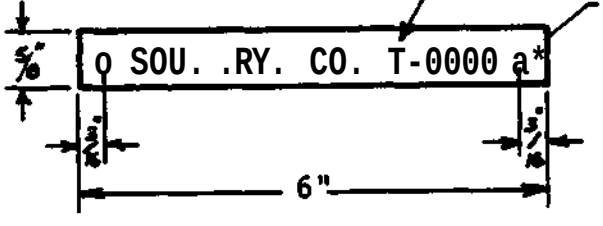


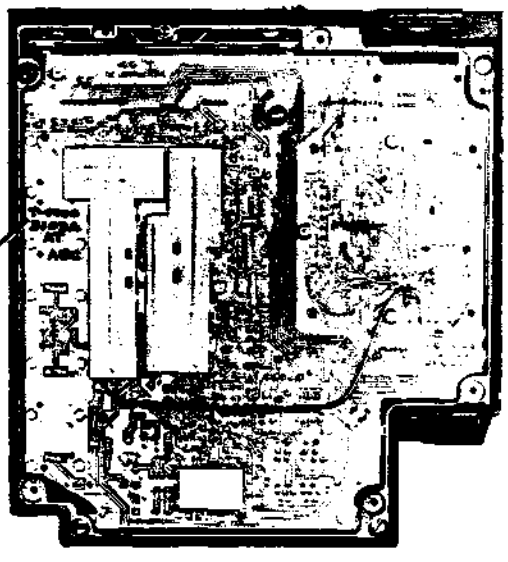
PLATE TO BE ANODIZED BLACK ALUMINUM 1/16" MOUNT TO RADIO WITH CONTACT CEMENT AND TWO (2) 1/4" #4 SHEET METAL SCREWS.

ENGRAVINGS WILL INDICATE SOU RWY OR N&W DEPENDING ON ACCOUNTING

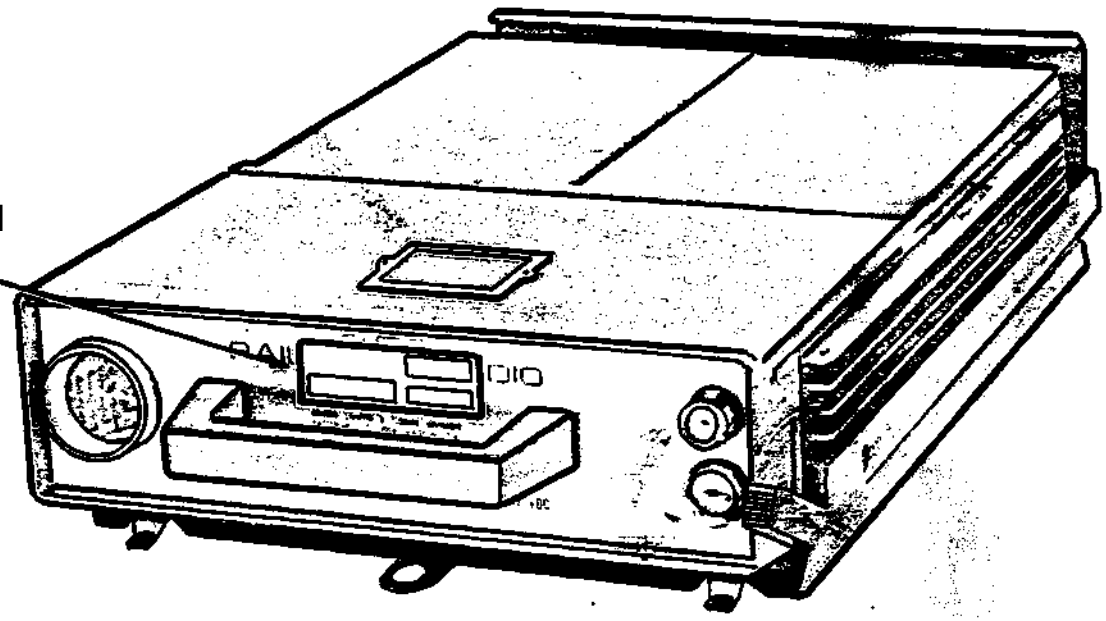
INTERNAL HAND ENGRAVING.

REMOVE BOTTOM COVER AND ENGRAVE ON PRINTED CKT. BOARD. ENGRAVE ID NUMBER, SERIAL NUMBER, SHOP CODE AND MAINTAINER'S INITIALS

VIEW WITH BOTTOM COVER REMOVED

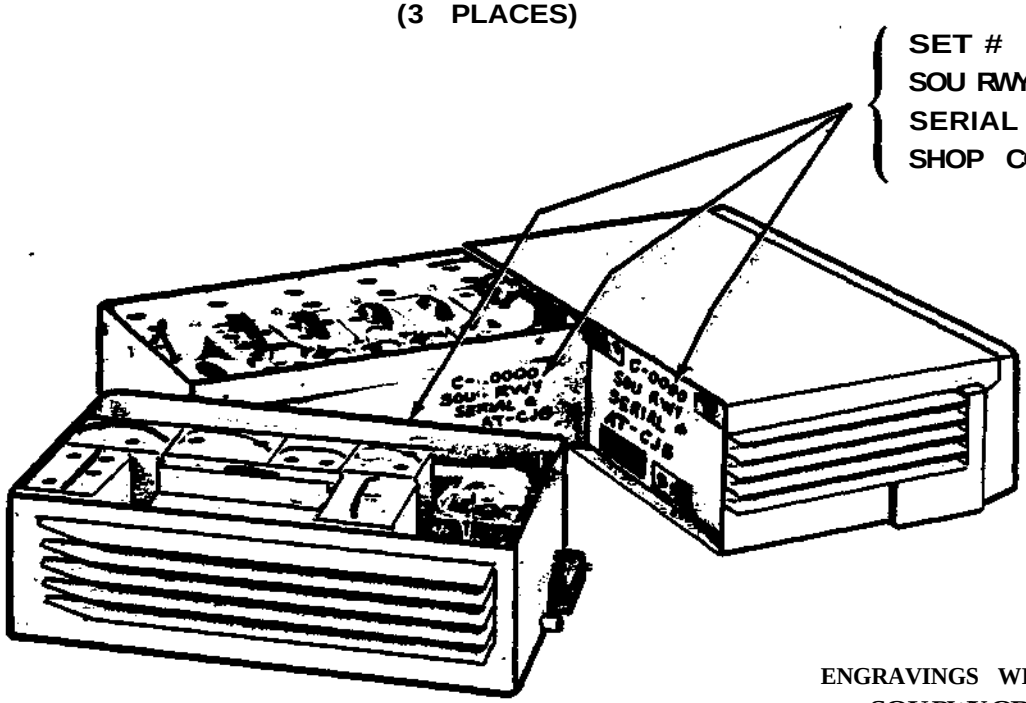


NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
IDENTIFICATION PLATE CLEAN CAB SYNTOR RADIO	ENGINEERi A.F.C.	APPROVEDi D.E.B.	DRAWING NO. RD 435
	DRAWN* R.B.D.	DATEi 7-15-8S	



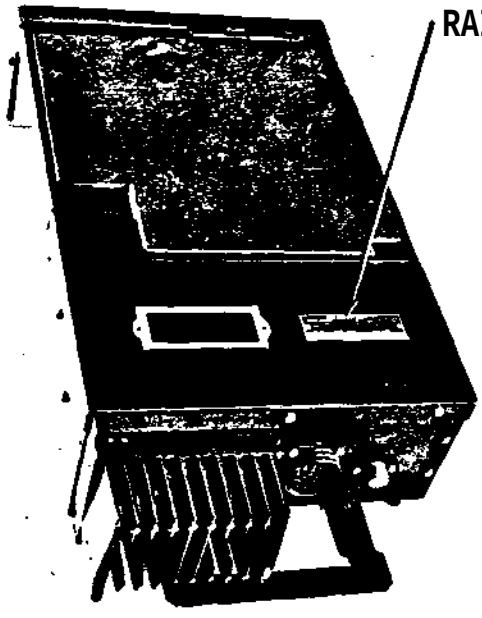
HAND ENGRAVE CONCEALED IDENTIFICATION ON CHASSIS SIDES

(3 PLACES)

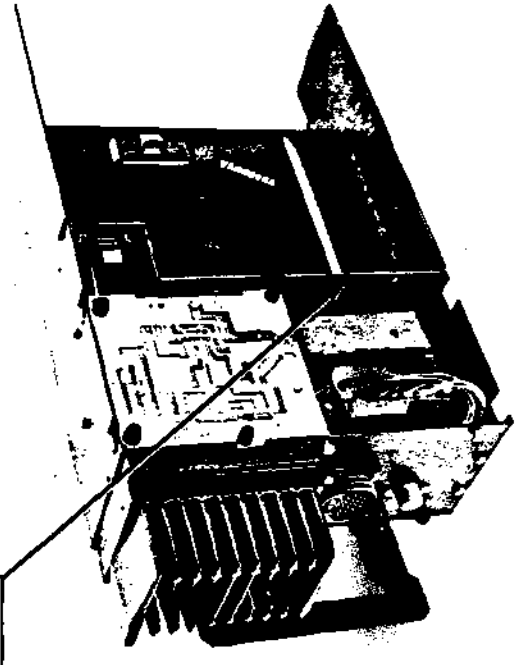


ENGRAVINGS WILL INDICATE
SOU RWY OR N&W RWY
DEPENDING ON ACCOUNTING

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
PLATE, CONCEALED ID ON HARMON BASE STATION	ENGINEER: A.F.C.	APPROVED! D.E.B.	DRAWING NO. RD 436
	ORAWNt R.B.D.	DATEi 7-15-8S	

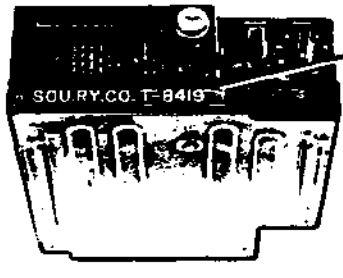


RAILROAD IDENTIFICATION PLATE



INTERNAL HAND ENGRAVING
MARK ON SIDE

C-0000
SERIAL #
SHOP CODE - MTR. INITIAL



MARK RADIO UNIT SAME AS RD-435
EXCEPT USE C NUMBER FOR BASE STATION
(USE T NUMBER FOR 64/12 UNITS)

ENGRAVINGS WILL INDICATE
SOU RWY OR N&W RWY
DEPENDING ON ACCOUNTING

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
PLATE, CONCEALED ID ON MOTOROLA SYNTOR AAR MOUNT	ENGINEER: A.F.C.	APPROVED. D£.B.	DRAWING NO. RD 437
	DRAWN: R.B.D.	DATE. 7-15-8S	

RR ID #T-_____
SERIAL #_____
SHOP CODE -(KTR. INITIALS)

INTERNAL ENGRAVING ON HEAT SINK IN THIS AREA.

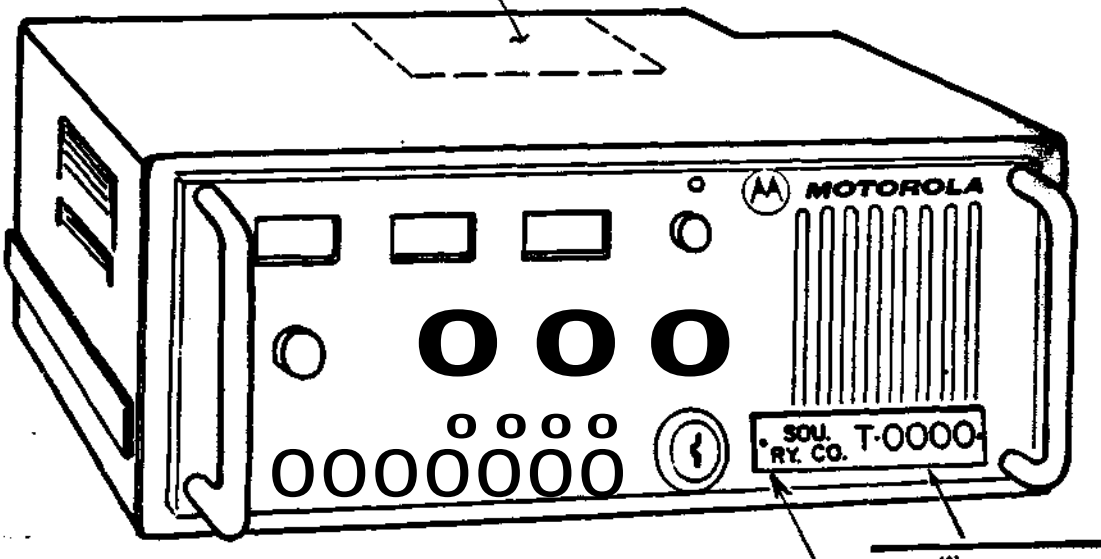


PLATE ATTACHED HERE WITH #4 SCREWS WITH 1/2" X 1/32" NORTON FOAM TAPE BETWEEN PLATE AND RADIO.

N&W RADIOS SHOULD HAVE PLATE ENGRAVED LIKE THIS:

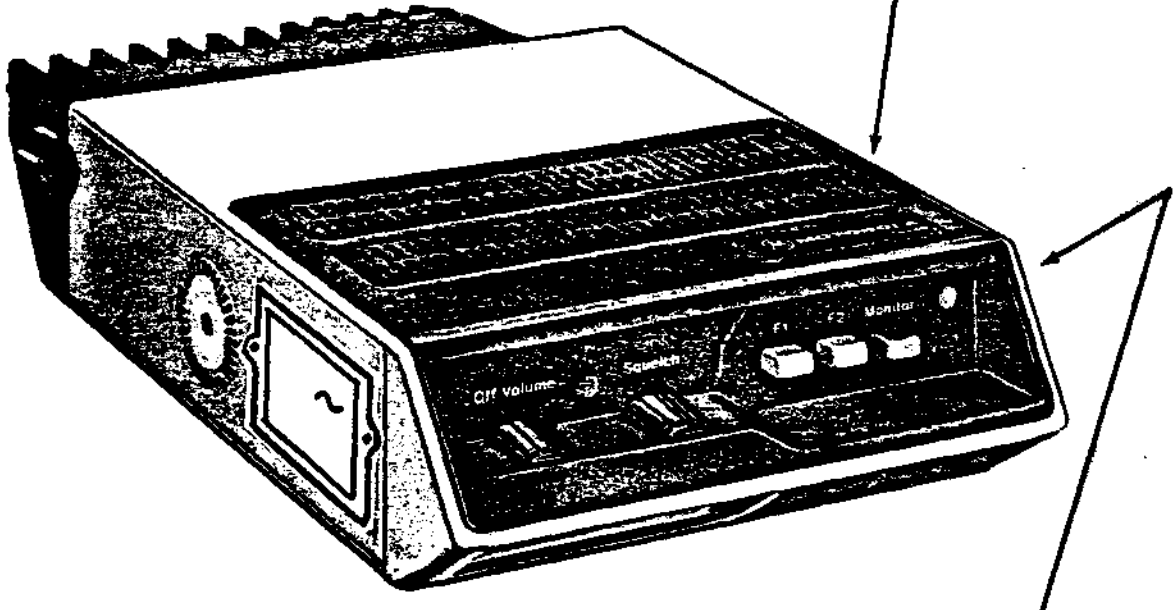
PLATE TO BE ANODIZED BLACK ALUMINUM 1/16" THICK, 5/8" WIDE, 3" LONG WITH TWO #33 HOLES 3/16" FROM EACH END.

ENGRAVINGS WILL INDICATE SOU RWY OR N&W RWY DEPENDING ON ACCTG.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
PLATE, CONCEALED ID MOTOROLA MCX 100 RR	ENGINEER: A.F.C.	APPROVED: D.E.B.	DRAWING NO. RD 438
	DRAWN: R.B.D.	DATE: 7-15-89	

INTERNAL ENGRAVING ON
METAL FRAME, RIGHT SIDE

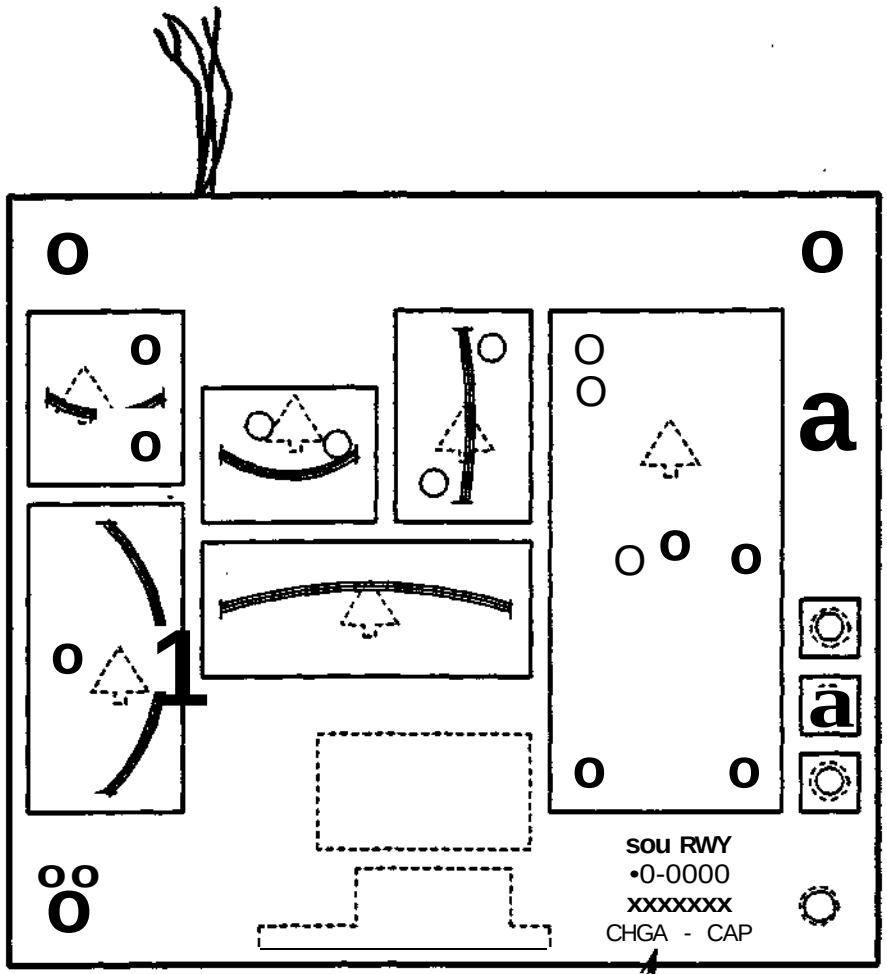
RRID#D-_ _ _ _
SERIAL #_____ _ _ _
SHOP CODE - (WR. WITIALS)



RR ID PLATE-
MOUNTED ON RIGHT SIDE

ENGRAVINGS WILL INDICATE
SOURWY OR N&WRWY
DEPENDING ON ACCOUNTING

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
PLATE, CONGEALED ID ON MAXAR	ENGINEERS A.F.C.	APPROVED! D.E.B.	DRAWING NO. RD 439
	DRAWN: R.B.D.	DAT& 7-15-8^	

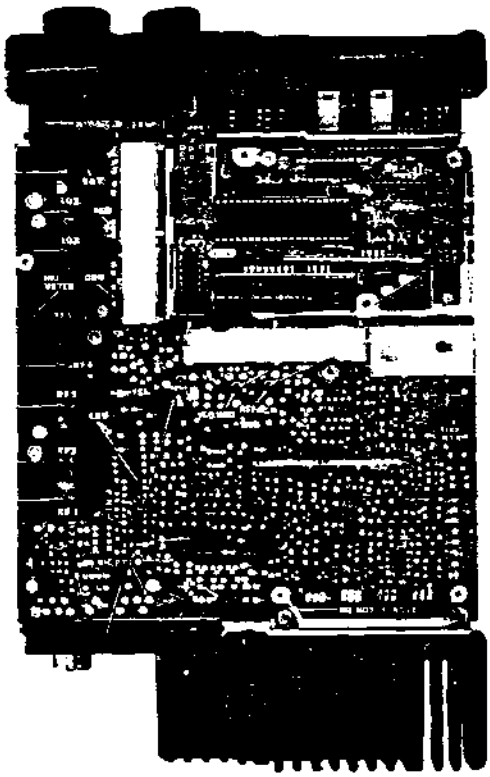


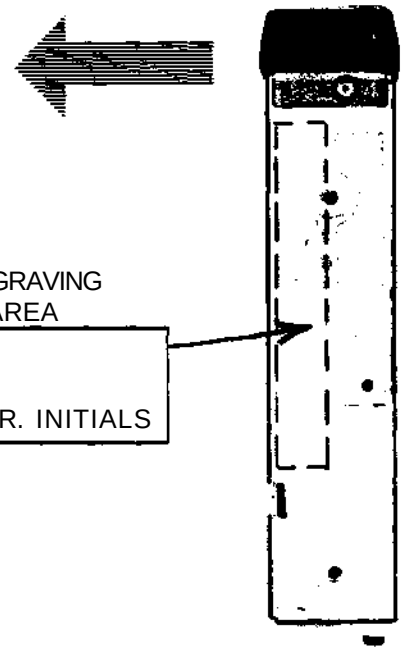
INTERNAL ENGRAVING IN THIS AREA.

OWNING RR
• D-0000
SERIAL *
SHOP CODE - MTR. INITIALS

ENGRAVE "SOU RWY'OR "N&W RWY[1]
DEPENDING ON CAPITAL ACCOUNTING.

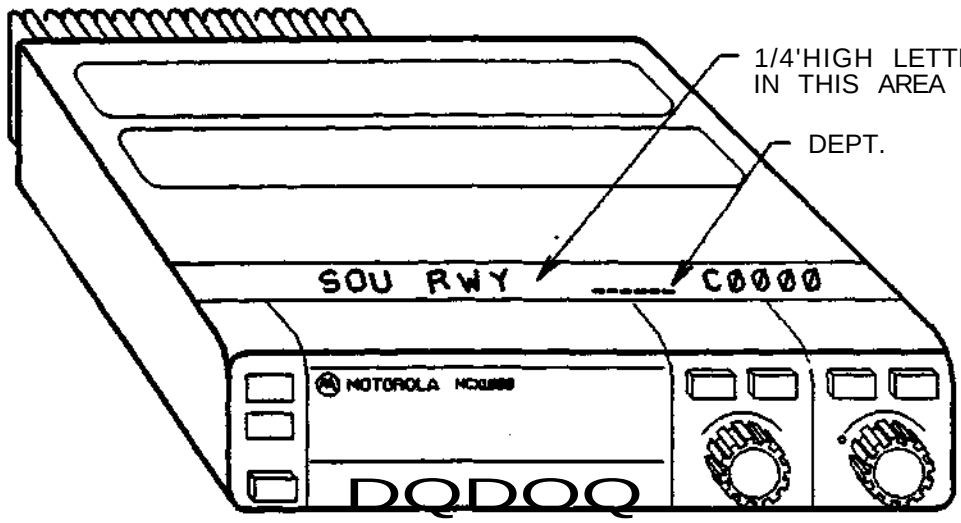
NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
ENGRAVING FOR REPCO TRANSMITTER	ENGINEER: **A.F.C.**	APPROVED! **D.E.B.**	DRAWING NO. RD 440
	DRAWN: **R.B.D.**	DATE) **7-15-8<?**	





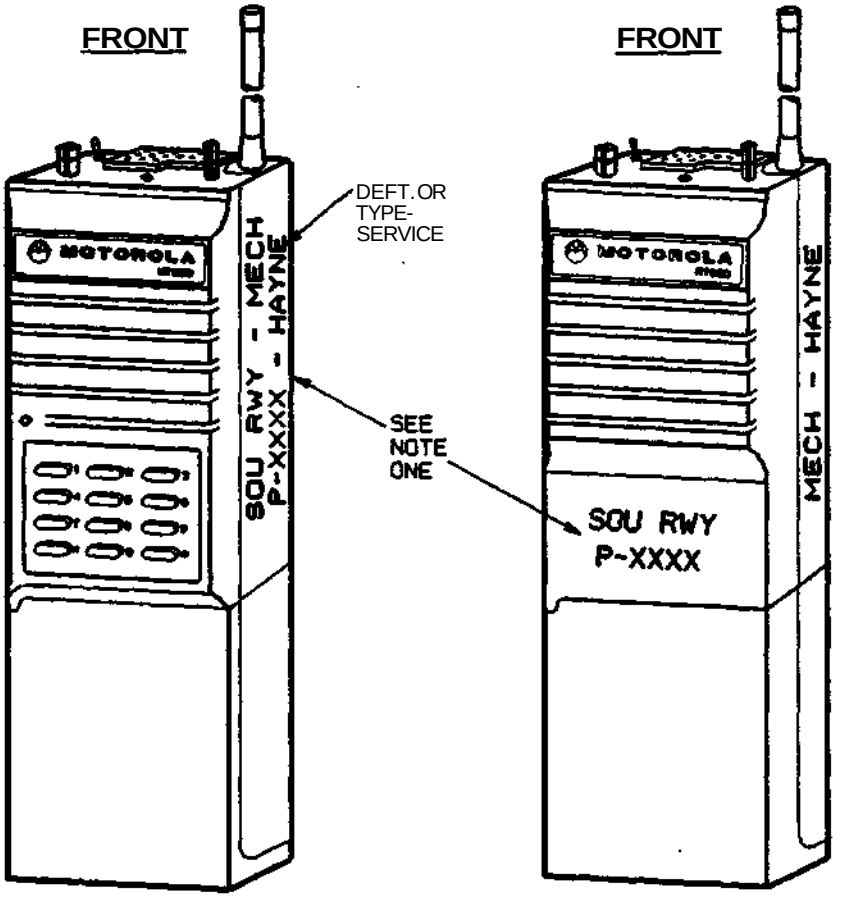
INTERNAL ENGRAVING
IN THIS AREA

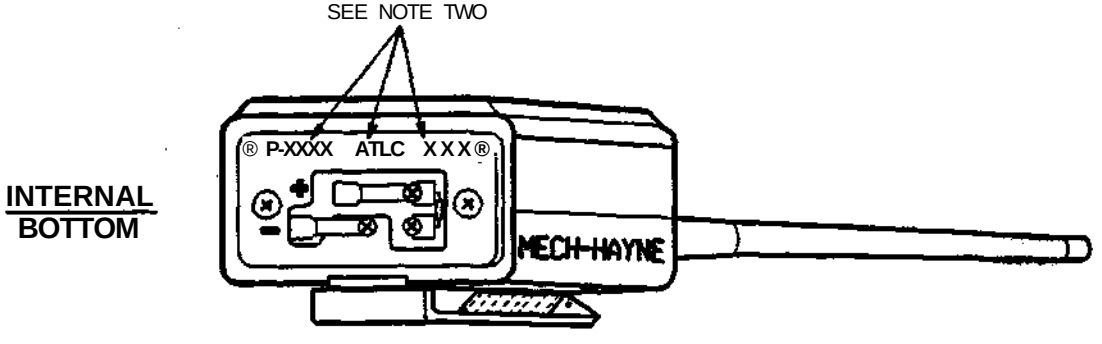
RR ID • C-0000
SERIAL •
SHOP CODE - MTR. INITIALS



*HOTE: ON REMOTE MOUNT RADIOS. DO THIS ENGRAVING ON RADIO AND ENGRAVE 'SOU RWT OR *N&N RWT ON TOP OF CONTROL HEAD.*

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
CONCEALED ID ENGRAVING AND EXTERNAL ENGRAVING FOR MCX100 8c MCX1000 RADIOS	ENGINEER: A.F.C.	APPROVED: D.E.B.	DRAWING NO. RD 441
	DRAWN: R.B.O.	OATEi 7-15-89	



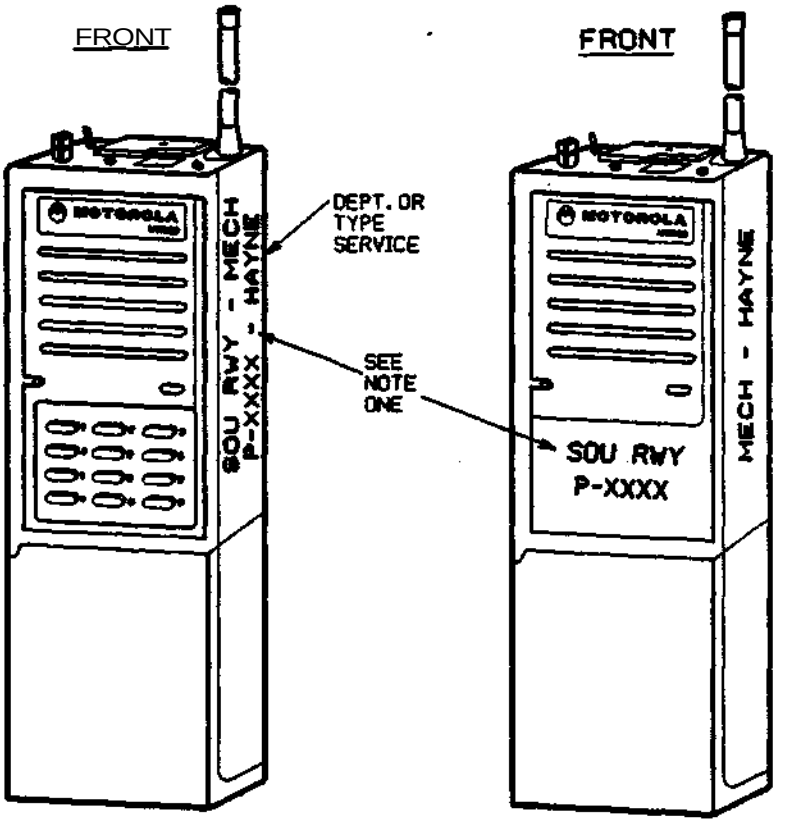


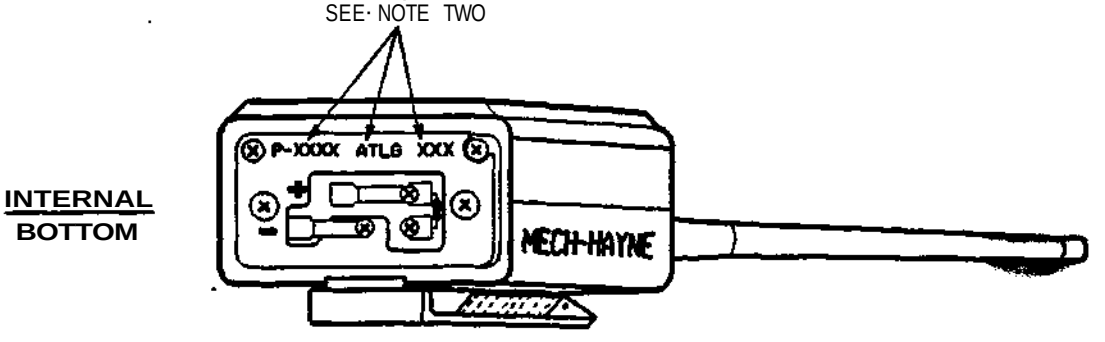
NOTESi

I. ENGRAVE 'SOU RWf OR 'tttltf RWY" DEPENOfNG UPON CAPITAL ACCOUNT.

Z. REUOVE BATTEFtr. HAND ENGRAVE ON BATTERY BRACKET. ENGRAVE ID NUMBER. SHOP CODE. ANO UA/NT AIMERS INITIALS.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
ENGRAVING FOR HT600	ENGINEER. **A.F.C.**	APPROVEDi D.E.B.	DRAWING NO. **RD 442**
	DRAWN: R.B.D.	DATEs 7-15-8S	



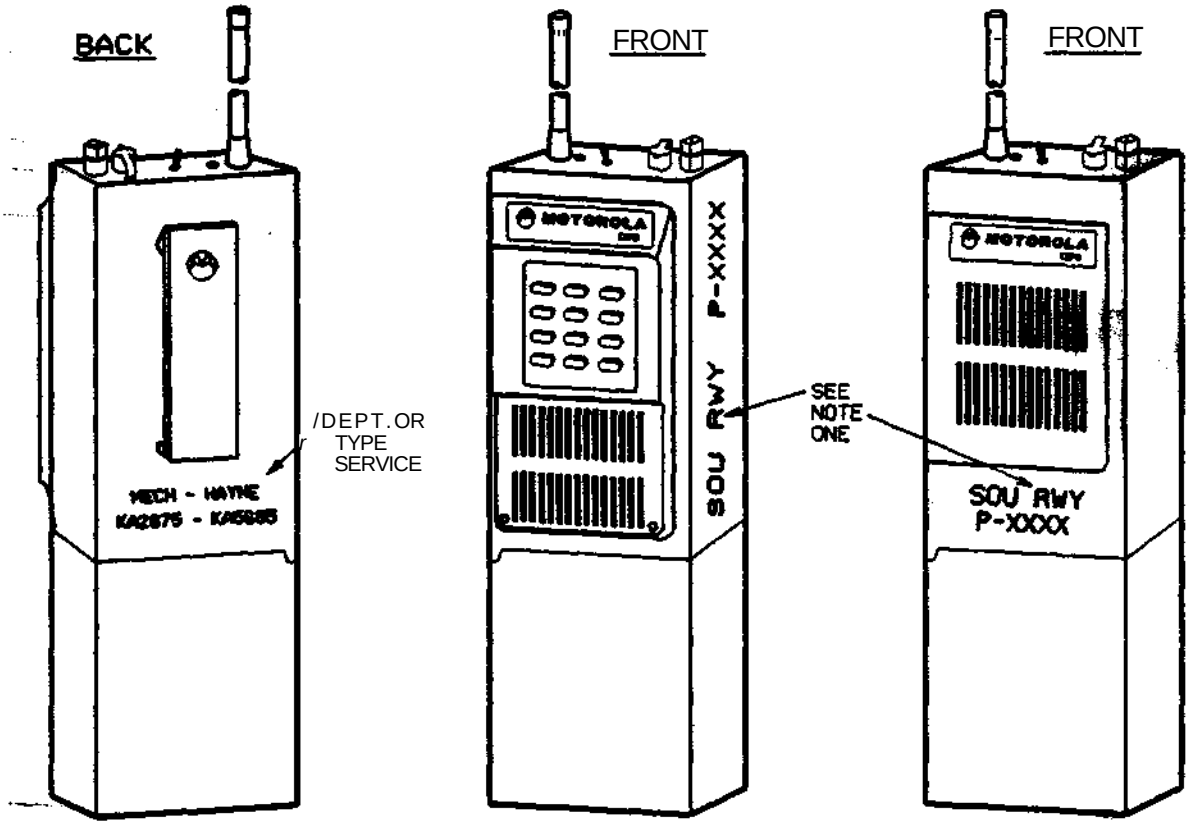


NQTESi

*I. **ENGRAVE •SOU RWT OR mN9Mf RWT DEPENDING** UPON CAPfTAL ACCOUNT.*

*Z. **REMOVE BATTEfff. HAND ENGRAVE ON BATTERY BRACKET.***
***ENGRAVE ID NUMBER.** SHOP CODE, At4D UAdNTAINERS INfTIALS.*

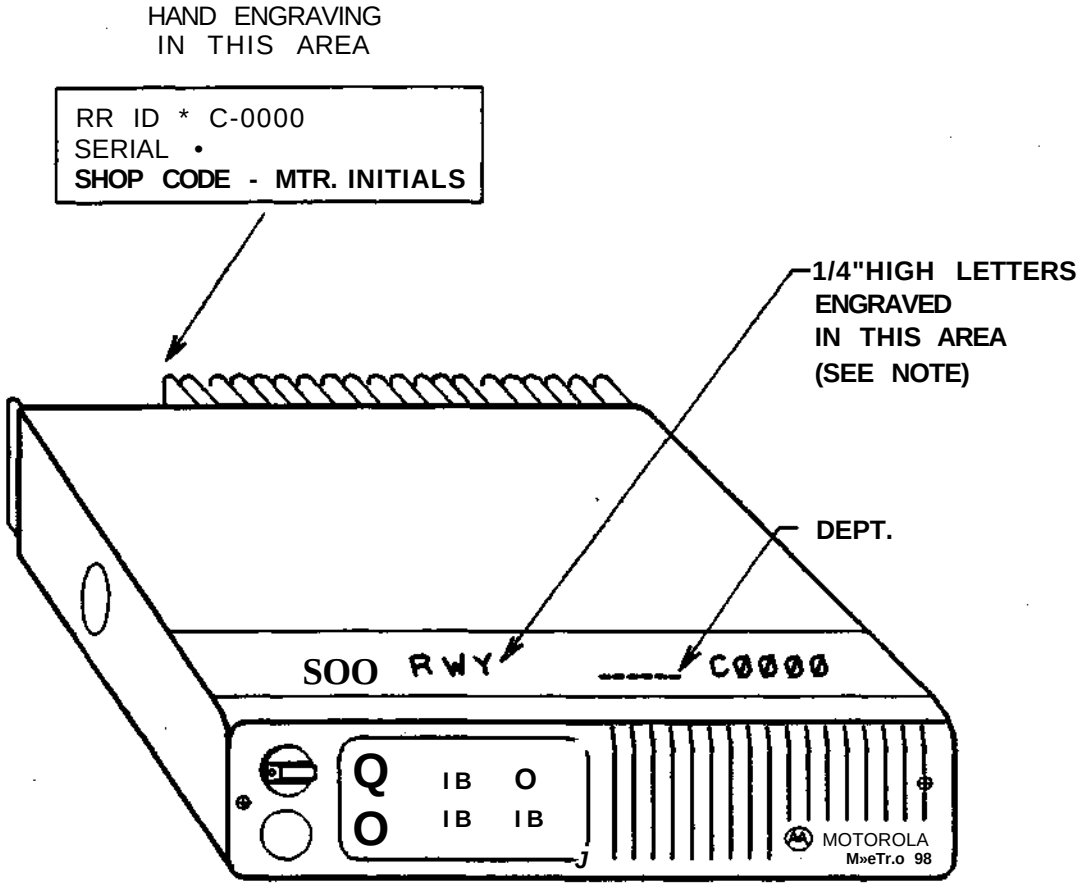
NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
ENGRAVING FOR MTI000	ENGINEER! A.F.C.	APPROVED: D.E.B.	DRAWING NO. **RD 443**
	DRAWNi R.B.D.	DATEi 7-15-8**	



NOTES*

1. *ENGRAVE "SOU mnr OR "N&W RWV DEPENDING UPON CAPTTAL ACCOUNT.*
2. *REMOVE BATTERY. HAND ENGRAVE ON BATTERY BRACKET. ENGRAVE ID NUMBER. SHOP CODE. AND MAJNTAJNERS INfTIALS.*

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
ENGRAVING FOR EXPO	ENGINEERi A.F.C.	fIPPTOVEDi D.E.B.	DRAWING NO. **RD 444**
	DRAWN: R.B.D.	DATE: 7-15-8S	

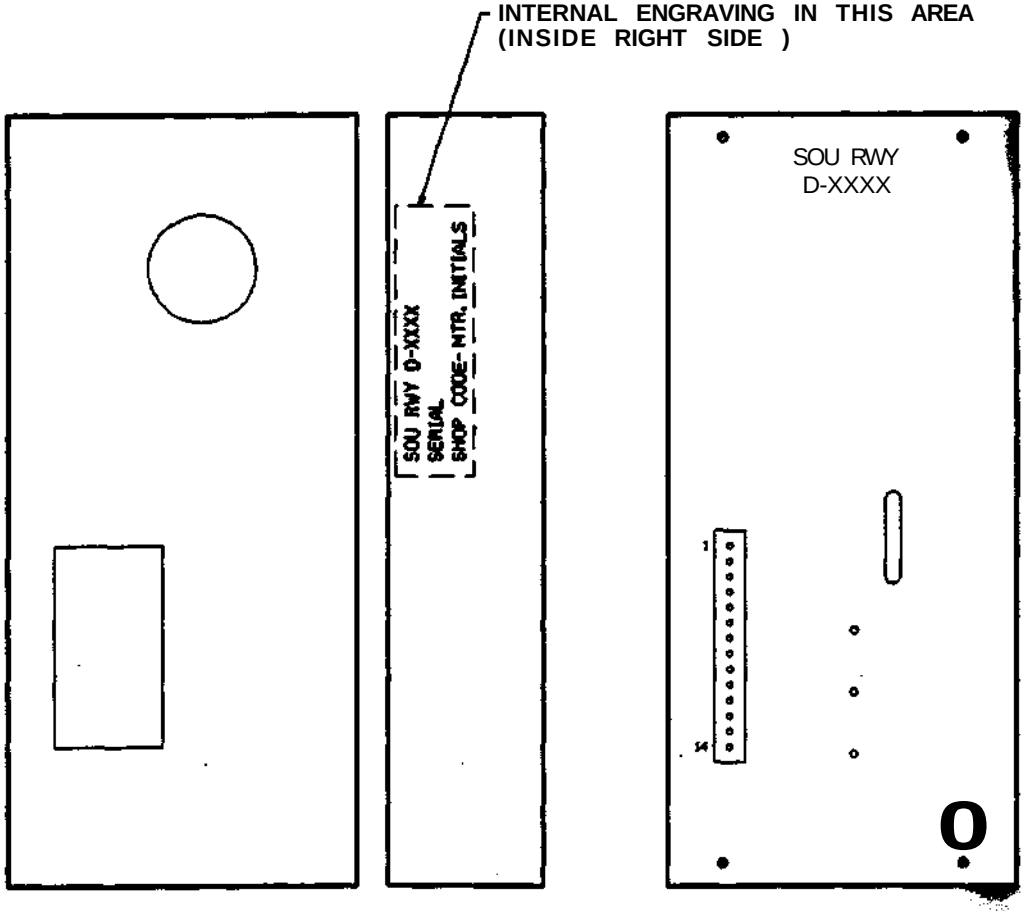


NOTES:

*I.ENGRME 'SOU RffTOR *NW PW DEPENDING UPON CAPfTAL ACCOUNT.*

2. CONCEALED HAND ENGRAVING TO BE DONE ON REAP HEAT SINK.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
ENGRAVING FOR MAXTRAC 50	ENGINEER: A.F.C.	APPROVED! D.E.B.	DRAWING NO. RD 446
	DRAWN: R.B.D.	DATEs 7-15-8S	



ENGRAVE 'SOU RWY[1] OR 'N&W RWY[1] DEPENDING ON CAPITAL ACCOUNTING.

NORFOLK 8OUTHERN	COMMUNICATIONS DEPARTMENT		
ENGRAVING FOR R. P. LINK	ENGINEER! A.F.C.	APPROVED: D.E.B.	DRAWING NO. RD 447
	DRAWN: R.B.D.	DATE: 7-15-8S	

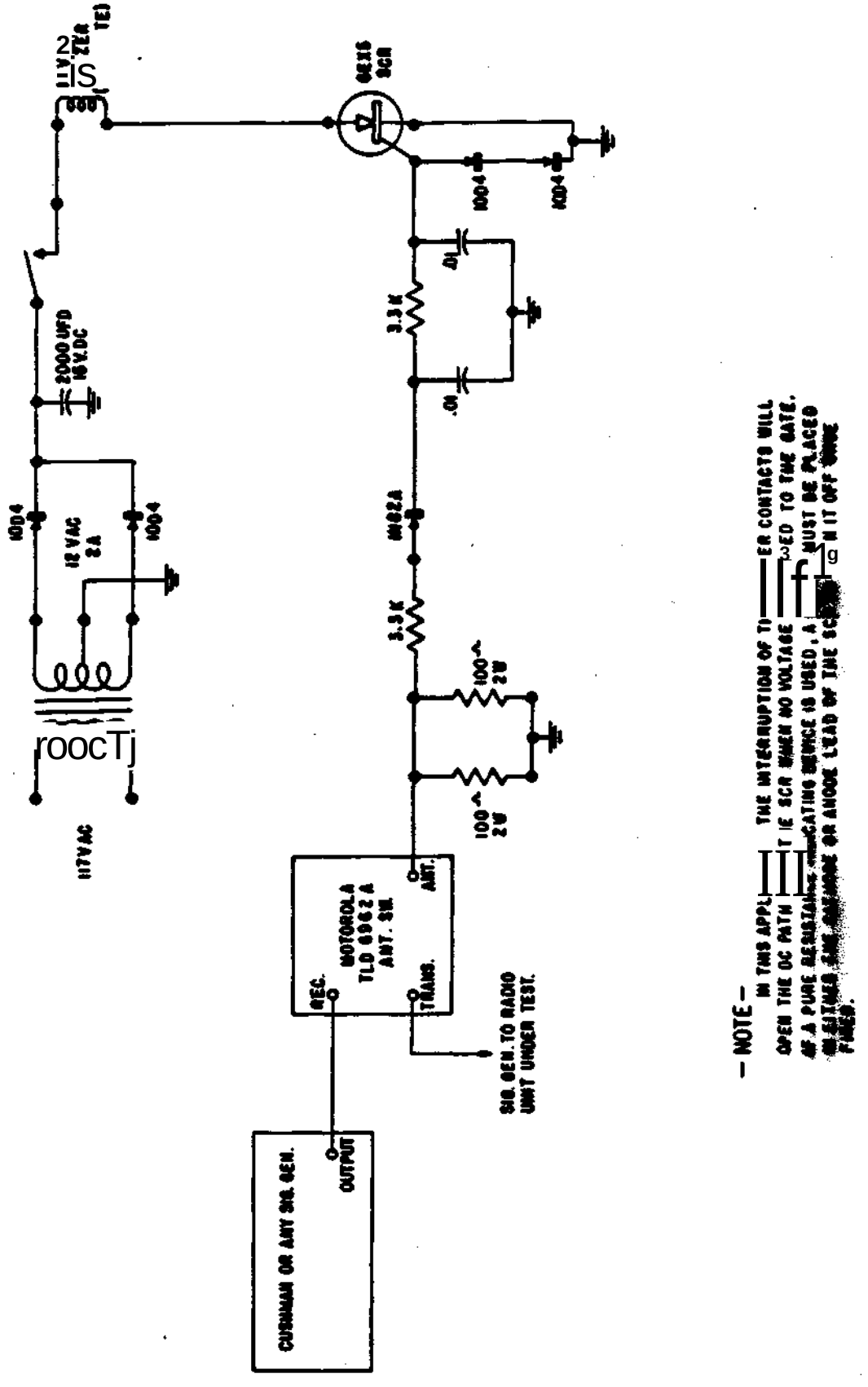
Section 5

Miscellaneous

RADIO INSTRUCTIONS MANUAL

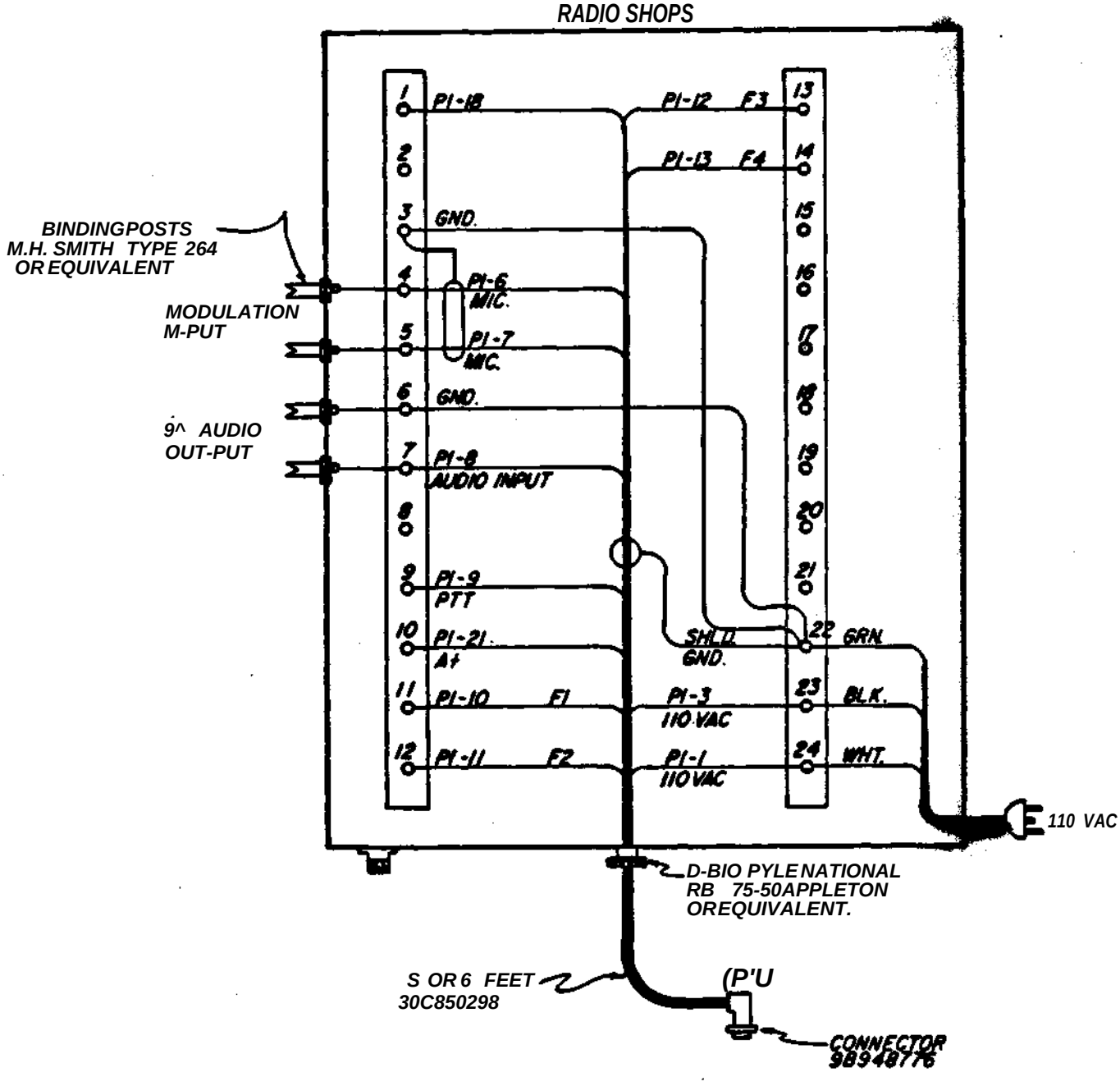
DRAWING NUMBER	TITLE
RD 500	INDEX - 500 GROUP
RD 501	PROTECTION CKT.FOR RF GENERATOR
RD 502	BASE STATION TEST CONTROL HEAD
RD 503	ALIGNMENT FOR AAR BASE STATIONS
RD504	MODIFICATION OF AAR RACK - H.B.D.
RD 505	INTERWIRING FOR RCP
RD 506	ALIGNMENT FOR LOCOTROL RADIOS - MOTRAN
RD507	ALIGNMENT FOR LOCOTROL RADIOS - MICOR
RD 508	LOCOTROL TEST RACK
RD 509	BLOCK DIAGRAM - BASE STATIONS
RD 510	REMOTE BASE STATION INTERWIRING
RD 511	LOCAL DESK SET SCHEMATIC
RD 512	BASE STATION/LOCAL DESK SET INTERWIRING
RD 513	2 FREQ. - LOCAL DESK SET SCHEMATIC
RD 514	2 FREQ.- BASE STATION/LOCAL DESK. SET INTERWIRING
RD 515	BASE-STATION/CONTROL HEAD INTERWIRING
RD 516	HIGH-LOW ANTENNA CONTROL FOR BASE STATION
RD 517	STANDARD EQUIPMENT ROOM GROUNDING
RD 518	ANTENNA LIGHTNING PROTECTION - BASE STATION
RD 519	DIESEL DERRICK - NEGITIVE GROUND
RD 520	DIESEL DERRICK - POSITIVE GROUND
RD 521	DIESEL DERRICK - ACCESSORY MODIFICATIONS

DRAWING NUMBER	TITLE
RD 522	DERRICK MX TRANSMIT ONLY MODIFICATION
RD 523	MACHINE SET WIRING
RD 524	FREQUENCY MONITOR - ALARM
RD 525	MACHINE SET WIRING - SYNTOR (2 PAGES)
RD 526	RADIO WIRING - SYNTOR - 611 STEAM ENGINE
RD 527	AAR MOUNT - 12V - MITREK
RD 528	MACHINE SET WIRING - MITREK
RD 529	RADIO CALL BOX
RD 530	MACHINE SET WIRING - MCX 100 OR MCX 1000
RD 531	RADIO BOX FOR MITREX AND MCX SERIES



NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
PROTECTION FROM ACCIDENTALLY KEYING TRANSMITTER INTO R.F. SIGNAL GENERATOR	ENGINEER: A.F.C.	APPROVED O.E.B.	DRAWING NO. **RD 501**
	DRAWN: R.B.D.	DATE: 7-15-8S	

MODIFIED TEST COMTROL -MEAD
FOR
RADIO SHOPS



NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
BASE STATION TEST CONTROL HEAD FOR RADIO SHOP	ENGINEER! A.F.C.	APPROVED. D.E.B.	DRAWING NO. RD 502
	ORAWNJ R.B.O.	OATEs 7-15-89	

ALIGNMENT PROCEDURE FOR AAR MOUNTED 117VAC/12VDC RADIOS

The following is an alignment procedure for all AAR mounted 117VAC/ 12VDC Motvan or Micor Radios which will be used in base station Installations. Since these radios will be interchangeable with **H.B.O.** installations and local control installations, it is necessary that they be set up as outlined.

Receiver Alignment

A. Follow normal shop procedures for receiver alignment and 20 db quieting. Set squelch fully tight.

B. Following steps should be taken for setting audio output level:

Step 1 - Remove test set (or meter panel). Have test rack on test cable connected to 8 ohms speaker, as in local control head. Connect AC voltmeter to terminals TB-2, 5 and 8 on AAR mounting rack or to test control head TB-1, 7 and 3.

Step 2 - Deviate output of signal generators 5 KHz with 1000 Kz tone. Adjust generator output to make certain a good quieting signal is received.

Step 3 - Feed 5 KHz modulated signal into receiver. Adjust internal volume control for 5.5 VAC reading. (If this level is set from another radio, it should be adjusted to 4.0 VAC.)

Transmitter Alignment

A. Follow normal shop procedure for transmitter alignment frequency, etc.

B. Following steps should be taken in setting IDC control:

Step 1 - Connect a 600 ohm audio generator at 1000 Hz on AAR rack terminals TB-2, 6 and 7 or to test control head TB-1, 4 and 5. Set output of generator for 3 VAC.

Step 2 - Adjust radio IDC control for 5 KHz modulation as observed on monitor and scope.

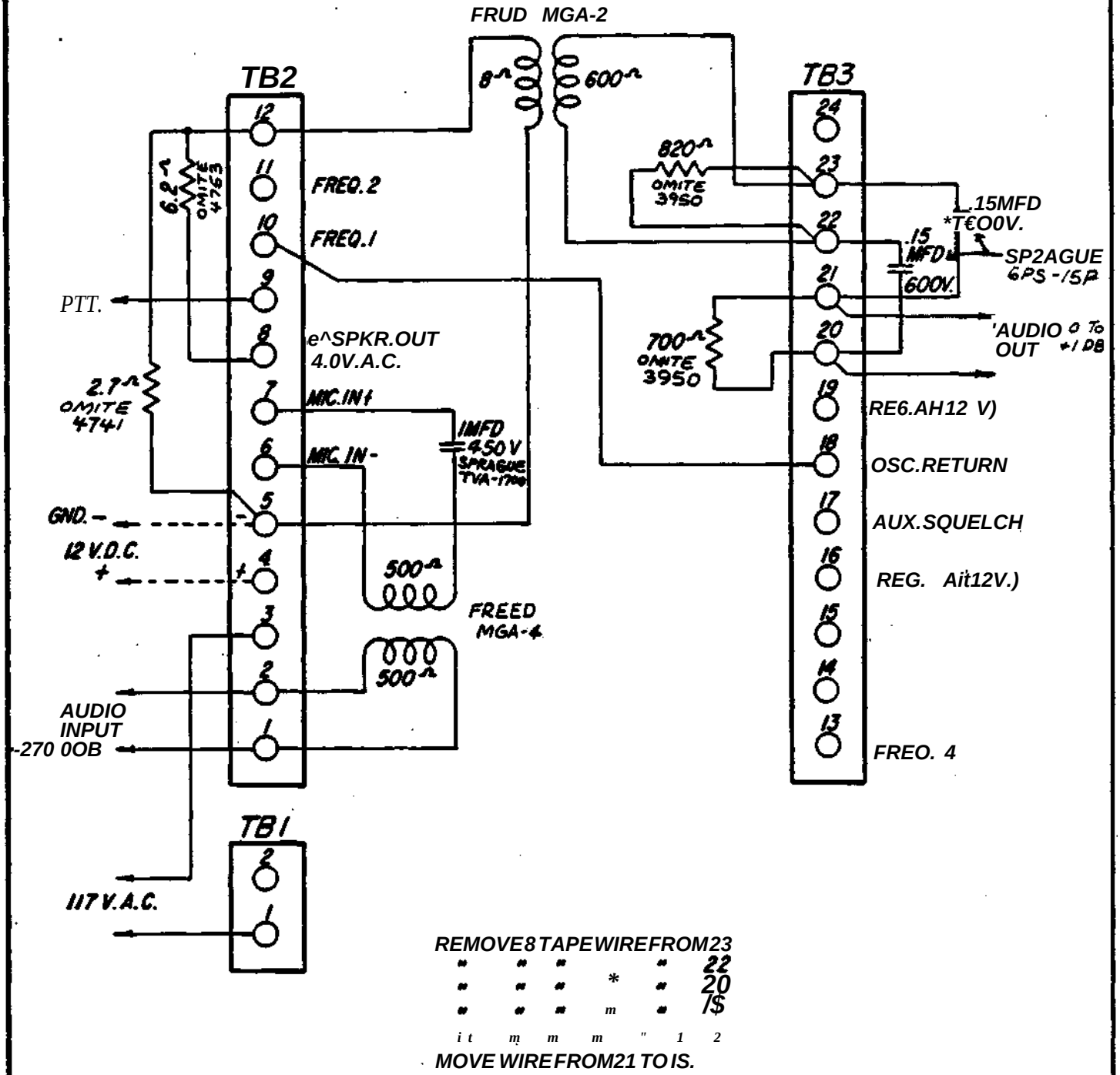
Step 3 - Re-adjust output of generator for .75 VAC. Modulation monitor should read no less than 3.75 KHz. If it does, check audio input circuit.

Time-Out Timer

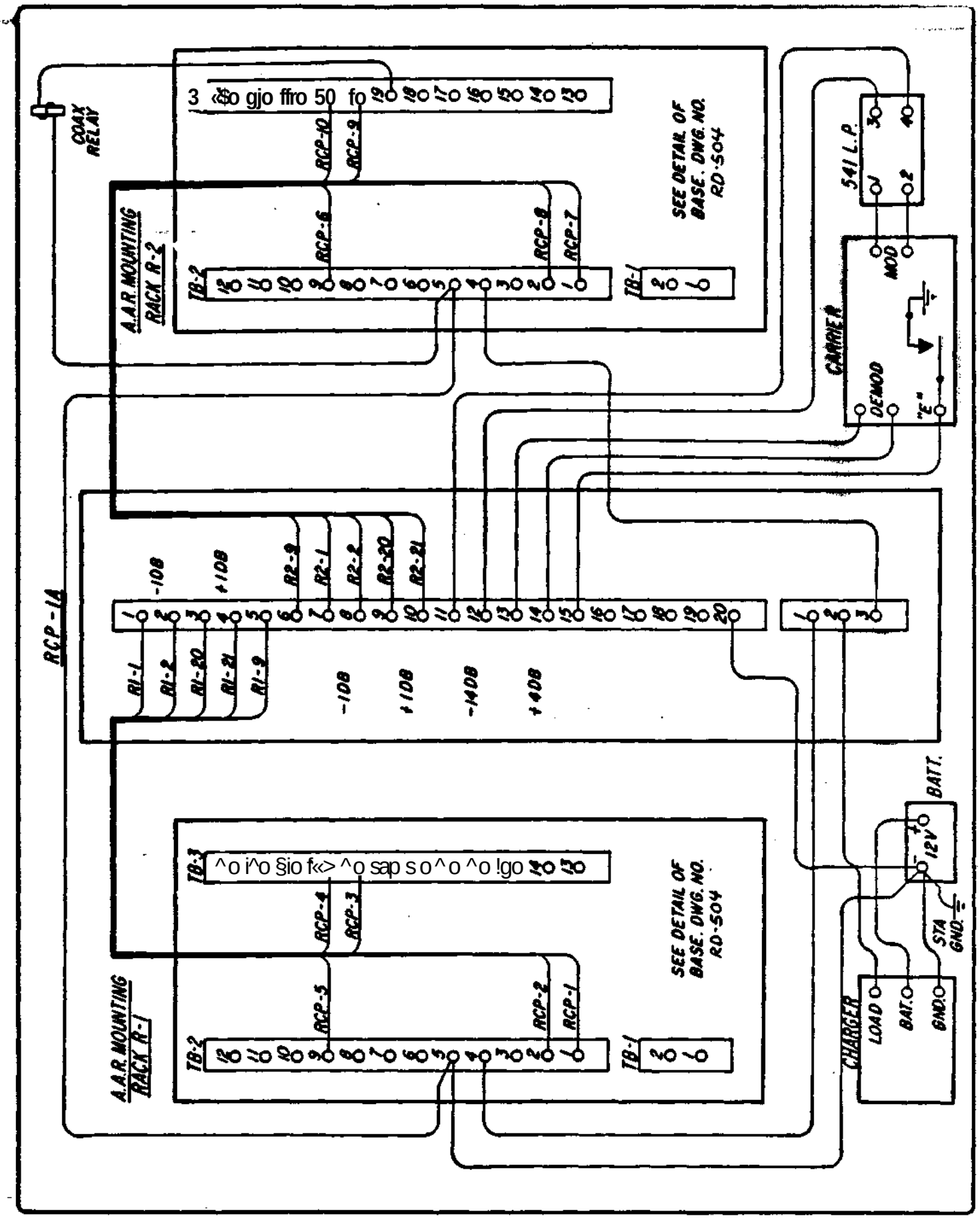
Follow normal shop procedure for checking time-out timer, being sure time is approximately one minute and that alert tone is applied to audio output.

Print (RD-502) showing test control head to use in bench testing and **alignment** of these radios.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
ALIGNMENT PROCEDURE FOR AAR MOUNTED 117VAC-12VDC RADIOS	ENGIICER. A.F.C.	APPROVED* D.E.B.	DRAWING NO. RD 503
	DRAWNi R.B.O.	DATE: 7-15-8S	



NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
MODIFICATION OF AAR RACK USED AT DEFECT DETECTOR LOCATIONS	ENGUCERi A.F.C.	APPROVED: L.E.B.	DRAWING NO. RD 504
	ORAWNi R.B.D.	DATE. 7-15-8S	



NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
DEFECT DETECTOR WITH RCP-1A.DC OPERATION	ENGDEERt AF.C.	APPROVED. D.E.B.	DRAWING NO. RD 505
	ORAWNt R.B.D.	DATEi 7-15-89	

LOCOTROL RADIO ALIGNMENT - MOTRAN

I. TRANSMITTER ALIGNMENT

A. Align transmitter per instruction manual 68-81041A15-F or later revision.

B. Note that above alignment requires that voltage be reduced 10% from 64 volts.

C. As last step, vary input voltage between 64 volts and 72 volts while watching RF power output. If there is a decrease, it indicates a problem and it must be found.

II. RECEIVER ALIGNMENT (Note: DBM measurements given can vary ±1 DBM normally.)

A. Align receiver per instruction manual 68-81041A15-F or later revision.

B. Adjust squelch control fully CCW.

C. The following steps should be taken for setting audio output level:

1. Modulate signal generator with a 2500 Hz signal of sufficient magnitude to have 5 KHz deviation.

2. Terminate receiver speaker output with an 8 to 600 ohm transformer terminated with a 600 ohm resistor.

3. Adjust volume control for a + 12 DBM level across the 600 ohm resistor. (Note: If equalizing network is used, this will be adjusted to + 1 DBM.)

4. Observe signal across 600 ohm resistor with oscilloscope for symmetrical wave form.

5. Modulate signal generator with 1500 Hz signal of sufficient magnitude to have 5 KHz deviation.

6. Check level across 600 ohm resistor. This should be + 21 DBM. (Note: If equalizing network is used, this should be + 1 DBM.)

7. Repeat Step 4.

D. Ground rack termina"[1] TB3-17 (AUX squelch) and check to insure there is no receiver output.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
ALIGNMENT FOR LOCOJROL RADIOS MOTRAN	INGtNEERi A.F.C.	APPROVED D.E.B.	DRAWING NO. RD 506
	DRAWNi R.B.D.	DATE: 7-15-8^	

LOCOTROL RADIO ALIGNMENT - MICOR

I. TRANSMITTER ALIGNMENT

A. Align transmitter per instruction manual 68-81012E10-C »r later revision and Micor service sheet 68-81102E81-F.

B. As last step, vary input voltage between 64 volts and 72 volts while watching RF power output. If there is a decrease, it indicates a problem and it must be found.

II. RECEIVER ALIGNMENT (Note: DBM measurements given can vary ± 1 DBM normally.)

A. Align receiver per instruction manual 68-81012E10-C or later revision and Micor service sheet 68-81102E81-F.

B. Adjust squelch control fully CCW.

C. The following steps should be taken for setting audio output level:

1. Modulate signal generator with a 2500 Hz signal of sufficient magnitude to have 5 KHz deviation.

2. Terminate receiver speaker output with an 8 to 600 ohm transformer terminated with a 600 ohm resistor.

3. Adjust volume control for a + 12 DBM level across the 600 ohm resistor. (Note: If equalizing network is used, this will be adjusted to + 1 DBM.)

4. Observe signal across 600 ohm resistor with oscilloscope for symmetrical wave form.

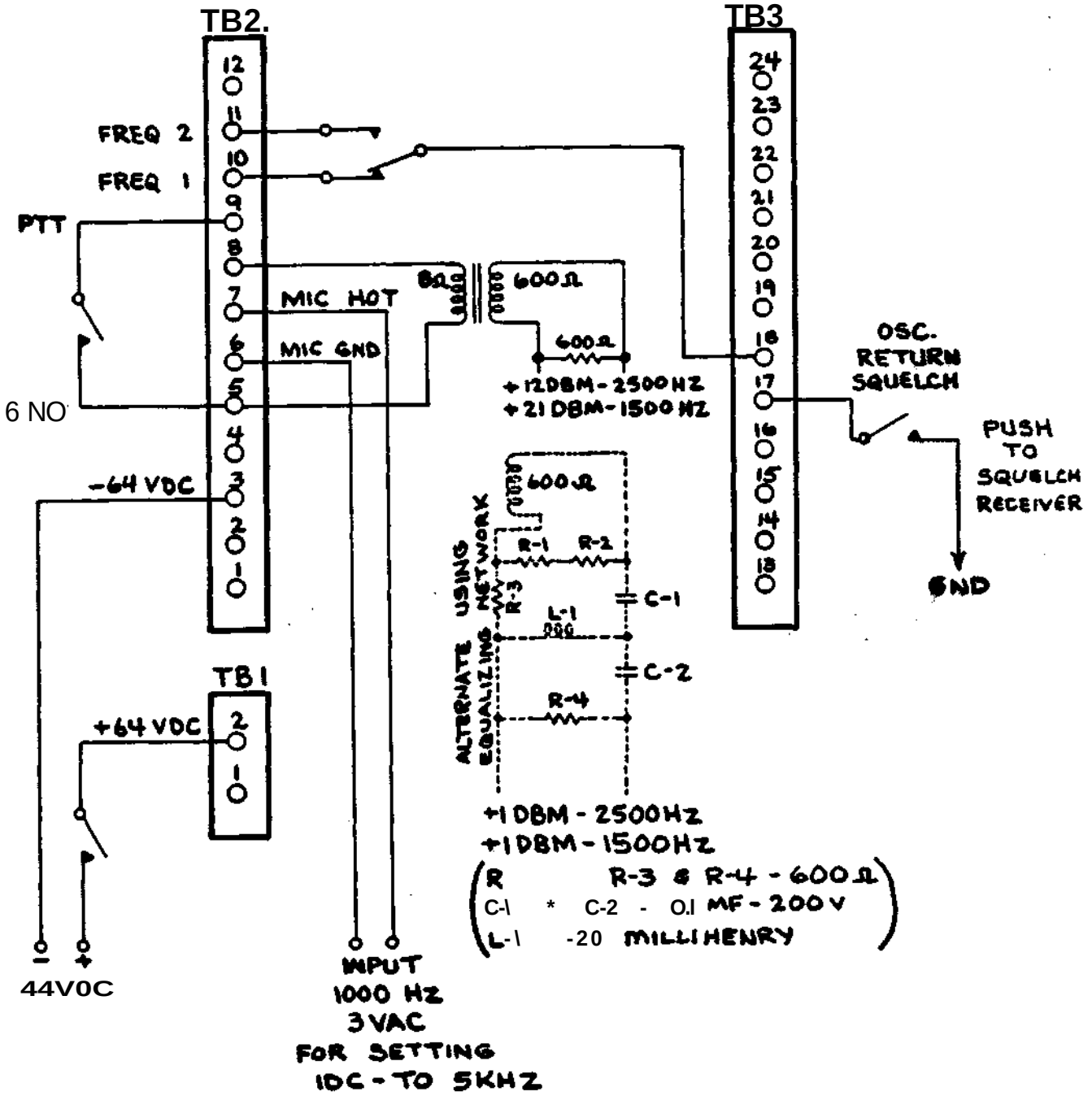
5. Modulate signal generator with 1500 Hz signal of sufficient magnitude to have 5 KHz deviation.

6. Check level across 600 ohm resistor. This should be + 21 DBM. (Note: If equalizing network is used, this should be + 1 DBM.)

7. Repeat Step 4.

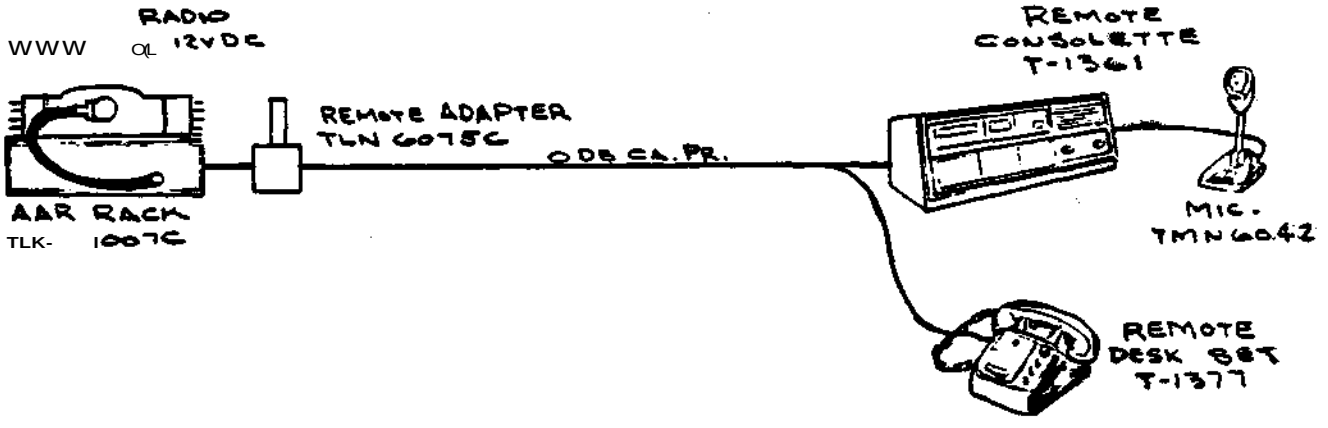
D. Ground rack terminal TB3-17 (AUX squelch) and check to insure there is no receiver output.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
ALIGNMENT FOR LOCOTROL RADIOS MICOR	ENGKCEFU A.F.C.	APPROVED! D.E.B.	ORAWING NO. RD 507
	ORAWNi R.B.D.	DATEt 7-15-8S	

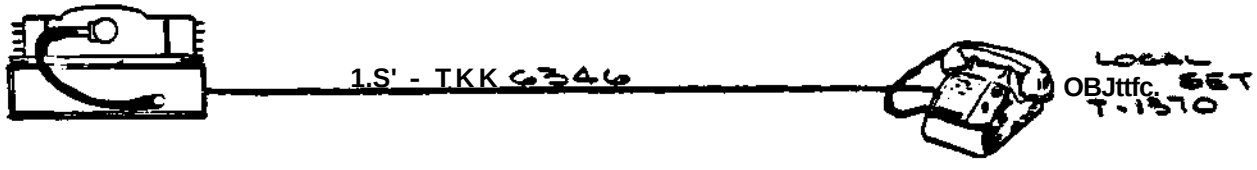


NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
TEST RACK - LOCOTROL RADIOS	ENGIICER. A.F.C.	APPROVED. D.E.B.	DRAWING NO. RD 508
	DRAWN. R.B.O.	DATE. 7-15-89	

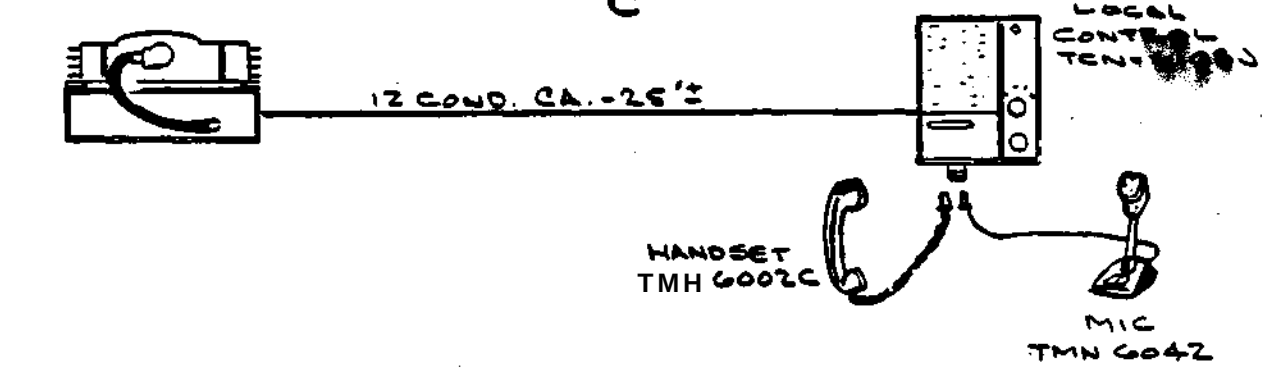
"A"



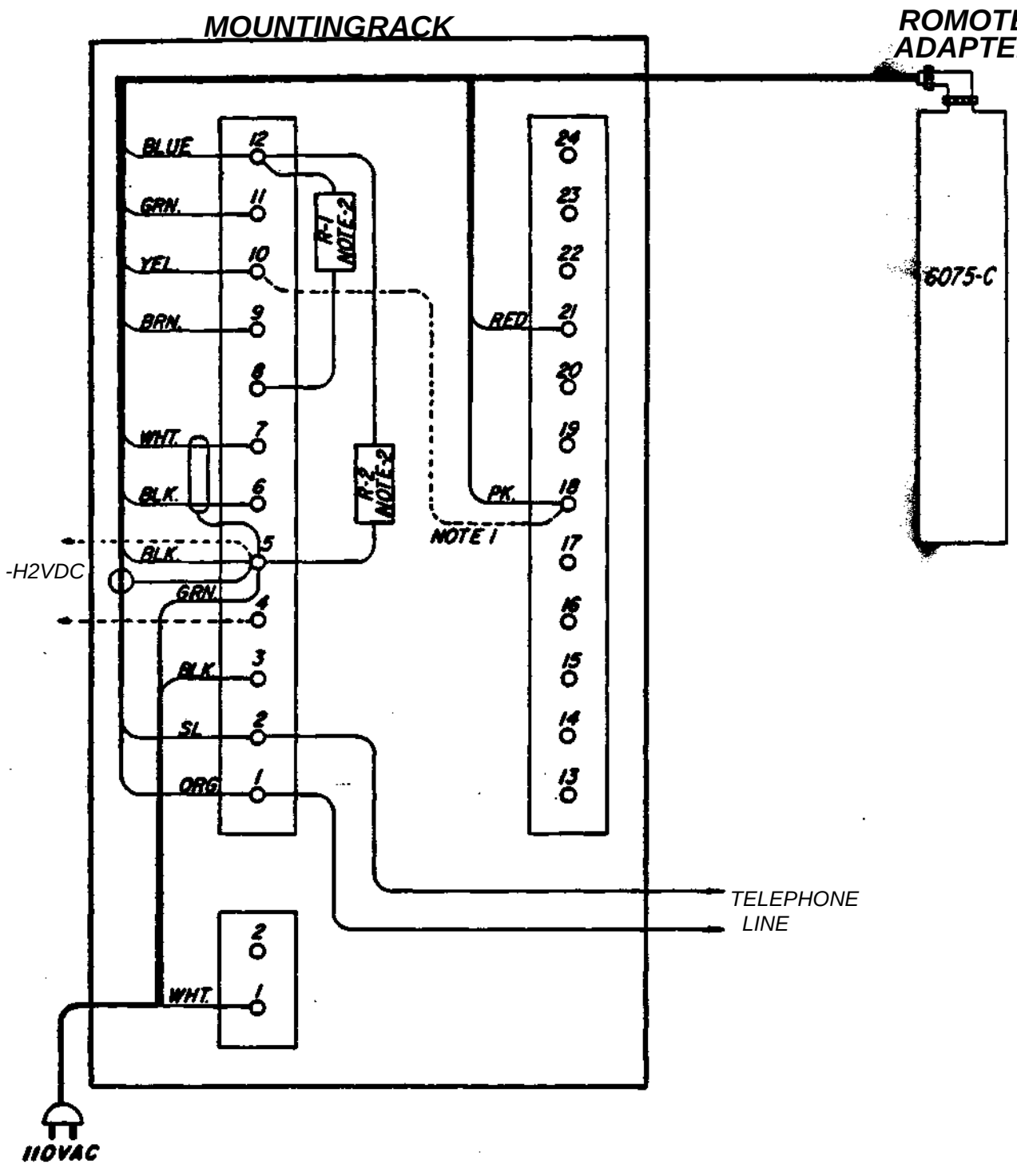
"B"



"C"



NORFOUK SOUTHERN	COMMUNICATIONS DEPARTMENT		
BLOCK DIAGRAM OF VARIOUS BASE STATIONS CONTROLS	ENBINEERi A.F.C.	APPROVED. D.E.B.	DRAWING NO. RD 509
	DRAWN. R.B.O.	DATE. 7-15-89	

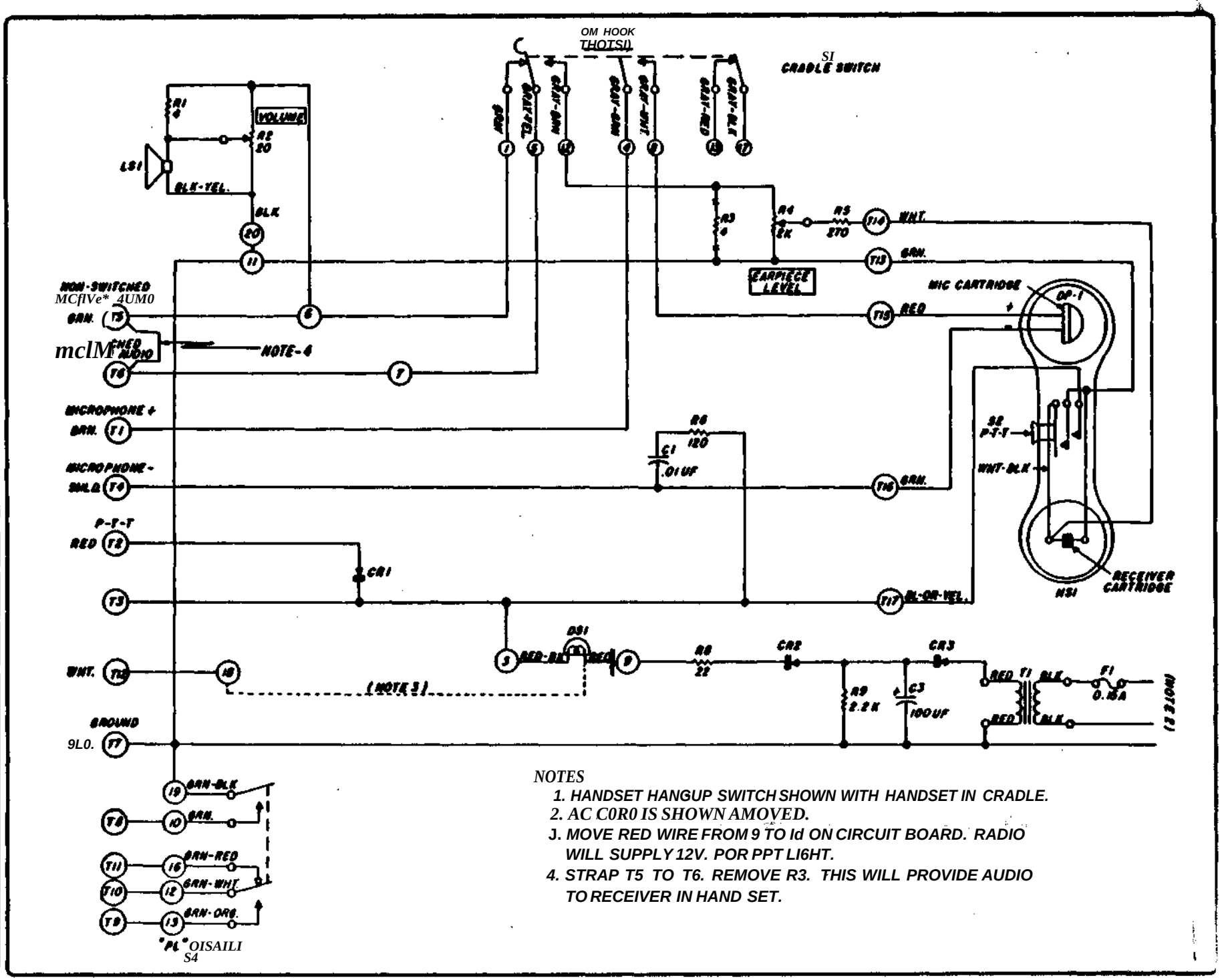


MOTES-

/-USE10TOIBJUMPERFORIFREQ.BASESTATION.(DONOTCONNECTPINK,YEL.,86RN.)

*2-RI:6.2^ R2*2.7[n]-(I2DBPA0W/BASESTATIONIMILEORLESSTOREMOTES)O-DBTOTELE.CKT.*
RI:5.0> R2:4.4[A](9DBPAD W/BASESTATION4MILES OF CABLE TO REMOTESh 3-OB TO LINE.*
RI:4Q[A] R2: 6-^ (6 DB PAD W/BASESTATION5MILESORMORE TO REMOTESH6-DB TOTELE.CKT.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
REMOTE BASE STATION INTER-WIRING	ENGINEERi A.F.C.	APPROVED. O.E.B.	•RAWING NO. RD 510
	OflAWNt R.B.D.	OATE: 7-15-8S	



NORFOLK SOUTHERN

COMMUNICATIONS

ENGINEER: A.F.C.
DRAWN: R.B.D.
APPROVED:
DATE: 7-1-89

DRAWING NO.

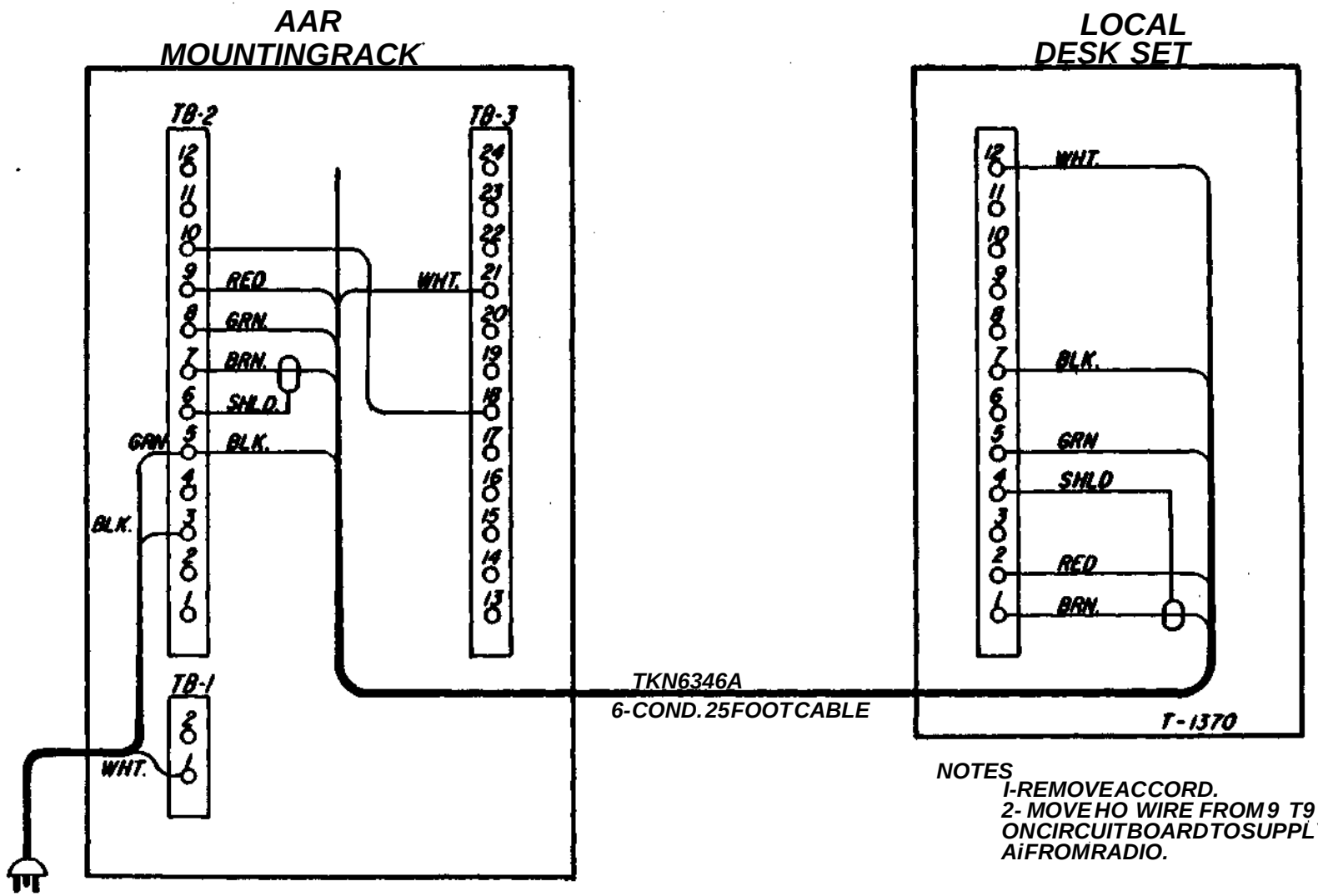
NORFOLK SOUTHERN

BASE 3 T
3S
m
28 K ST

COMMUNICATIONS DEPARTMENT

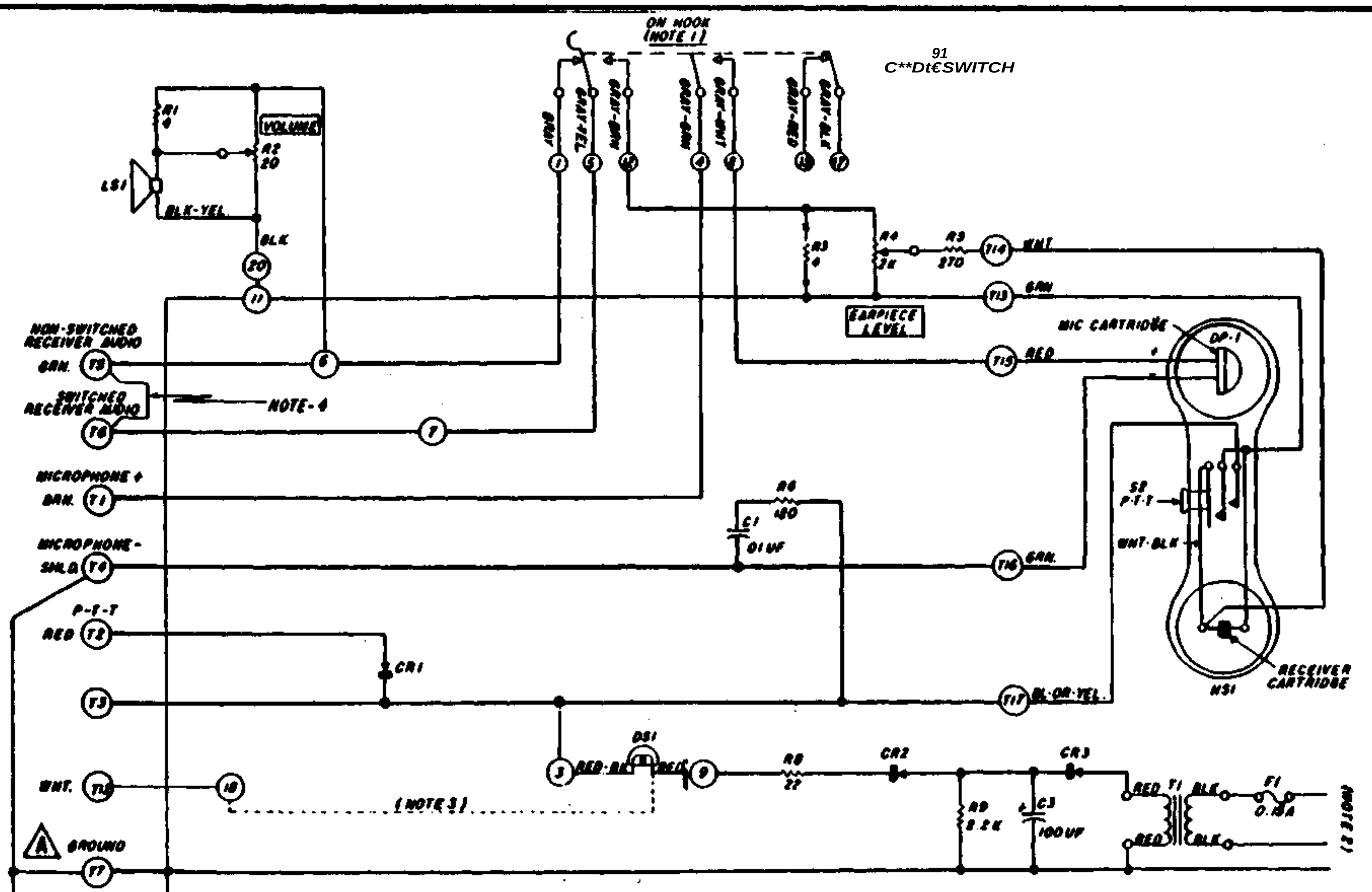
ENGINEER: A.F.C.	APPROVED: D.E.B.
DRAWN: R.B.D.	DATE: 7-1 00

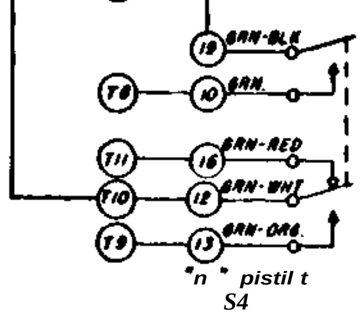
DRAWING NO. D O 1



NOTES

I-REMOVEACCORD.
2- MOVEHO WIRE FROM9 T9 l# ONCIRCUITBOARDTOSUPPLY12V.
AiFROMRADIO.





NOTES

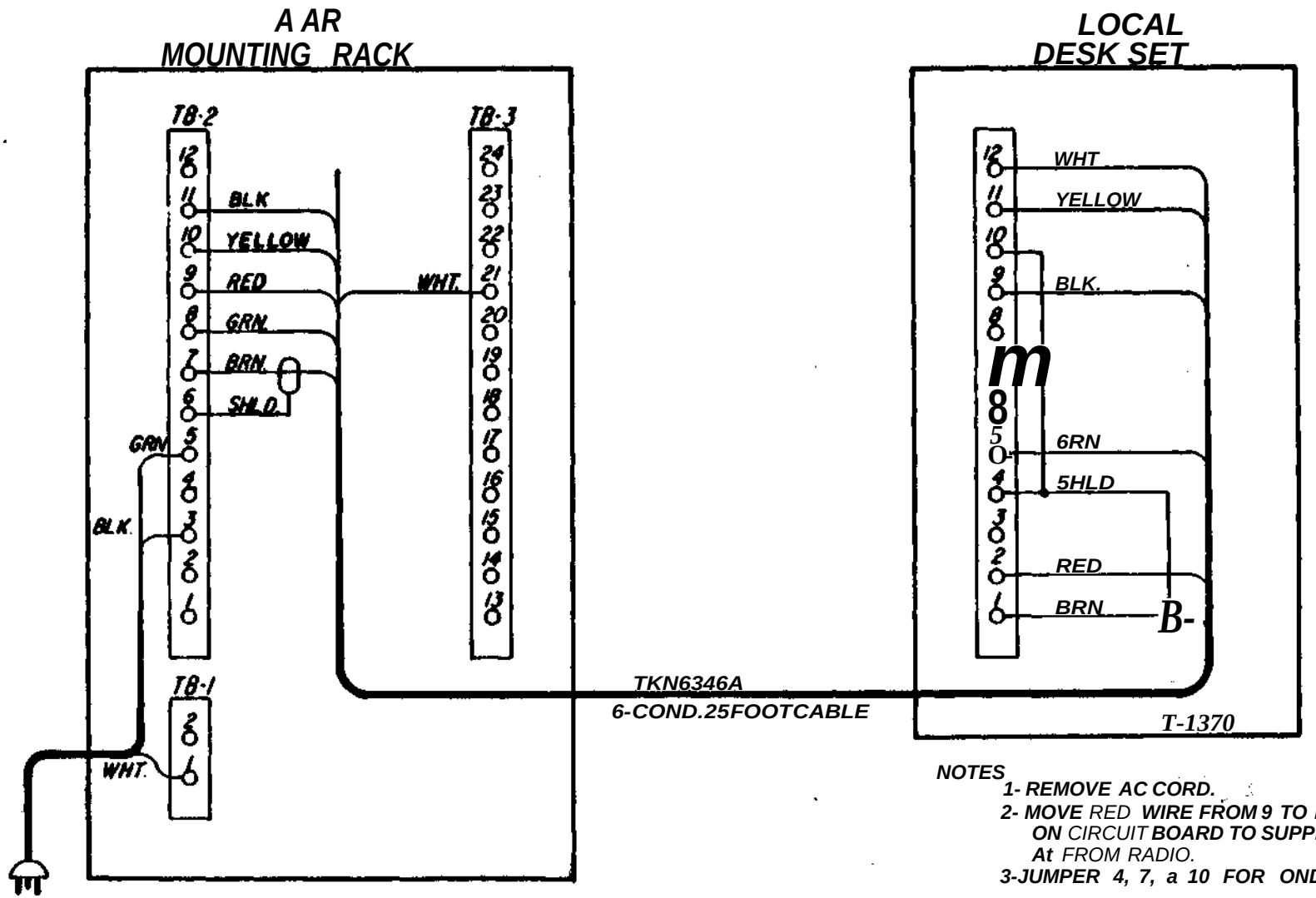
1. HANDSET HANGUP SWITCH SHOWN WITH HANDSET IN CRADLE.
2. AC CORD IS SHOWN REMOVED.
3. MOVE RED WIRE FROM 9 TO 18 ON CIRCUIT BOARD RADIO WILL SUPPLY 12V FOR PPT LIGHT
4. STRAP T5 TO T6. REMOVE R3. THIS WILL PROVIDE AUDIO TO RECEIVER IN HAND SET.
5. JUMPER T4, T7, & T10 WHEN LOCAL DESK SET USED IN TWO FREQUENCY OPERATION.
6. MODIFY S4 TO REMOVE SPRING RETURN (OPTIONAL)

NORFOLK SOUTHERN

BASE STATION - LOCAL DESK SET
INTERWIRING (2 FREQUENCY)

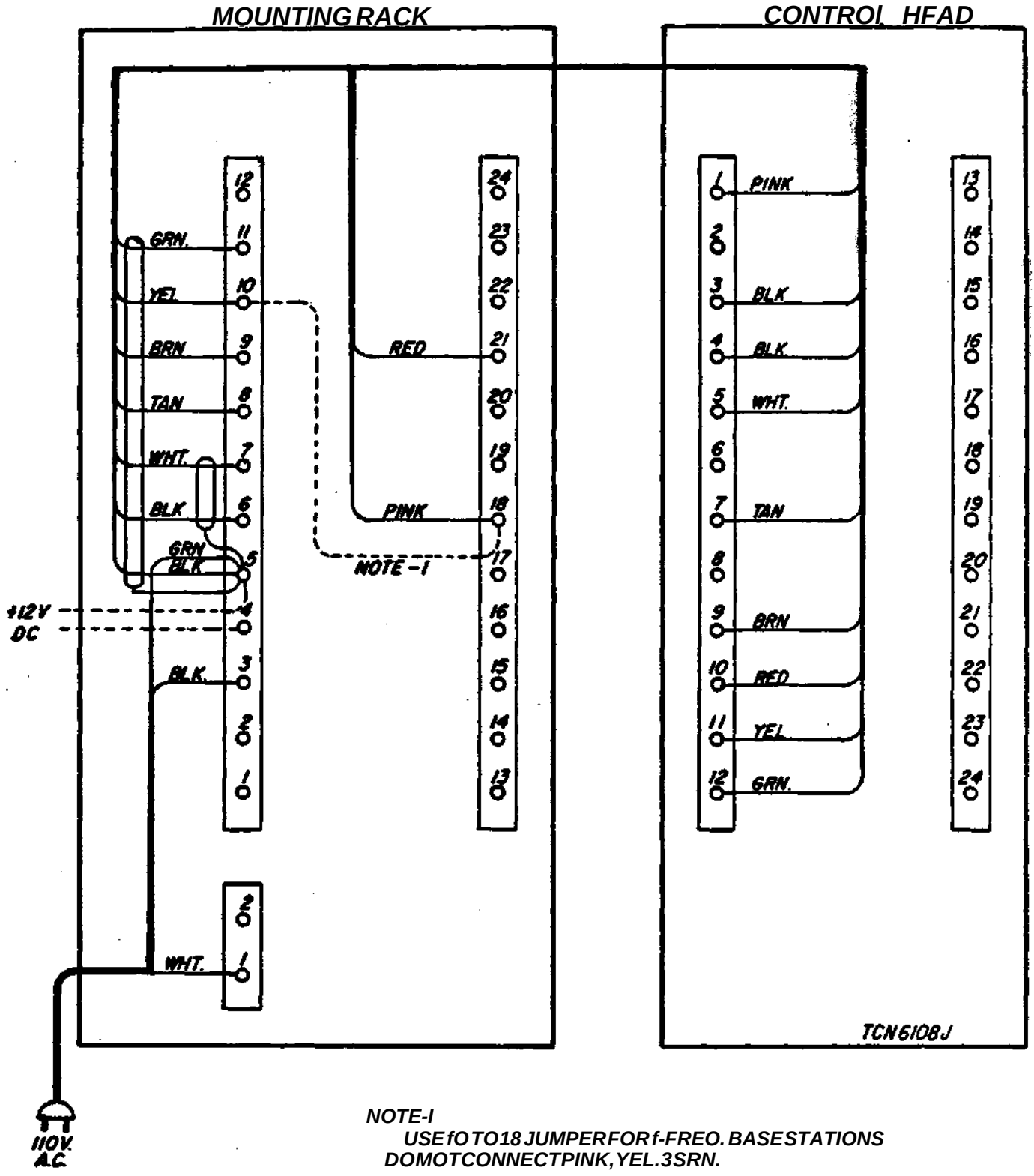
COMMUNICATIONS & ELECTRONICS

ENGINEER	APPROVED	DRAWING NO.
A.F.C.	D.E.B.	RD 514
DRAWN: R.B.D.	DATE: 7-1-8	



NOTES

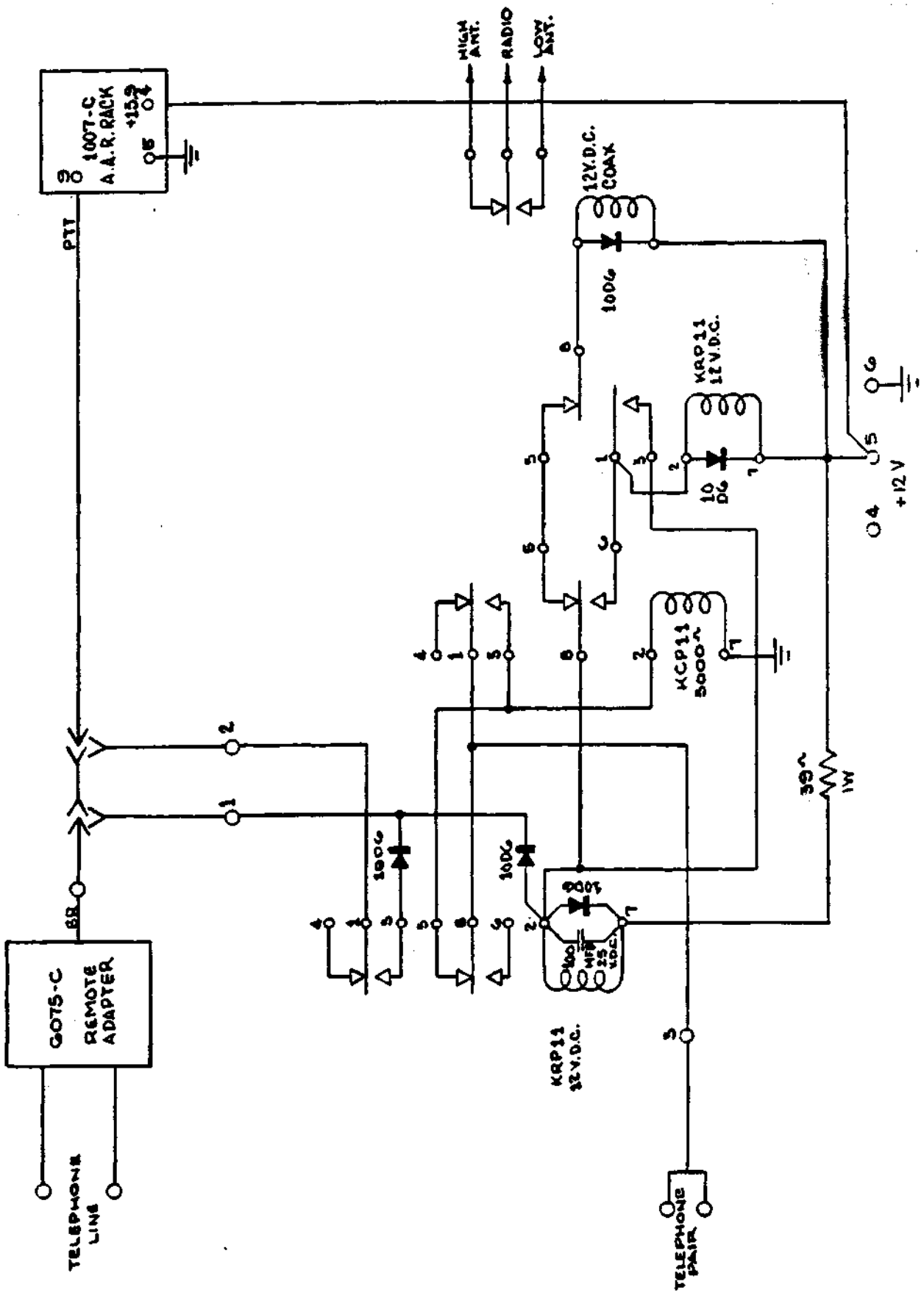
1- REMOVE AC CORD.
2- MOVE RED WIRE FROM 9 TO IB ON CIRCUIT BOARD TO SUPPLY 12V. At FROM RADIO.
3-JUMPER 4, 7, a 10 FOR OND.



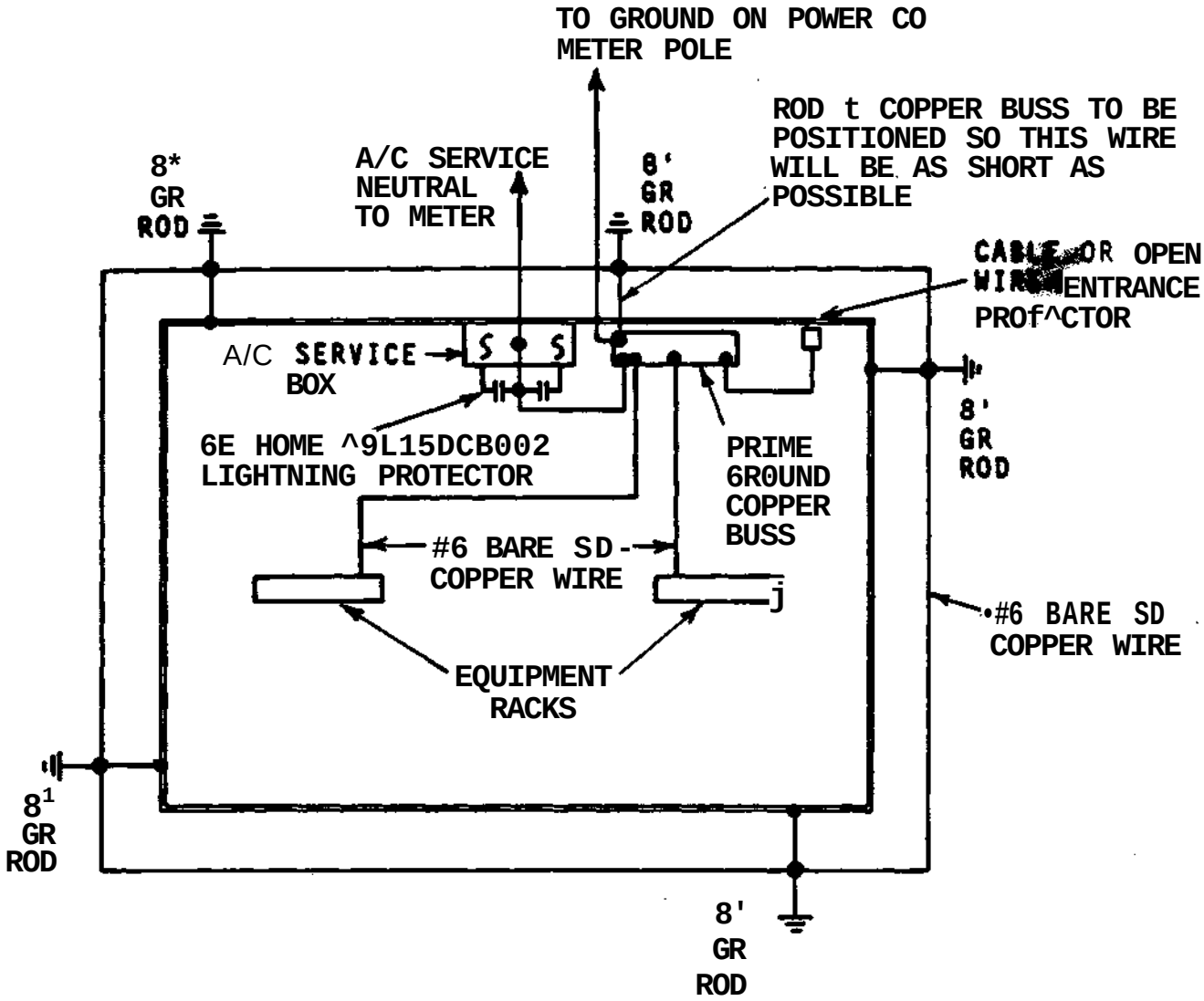
NOTE-I

USE fOTO18 JUMPERFORf-FREO. BASESTATIONS DOMOTCONNECTPINK, YEL.3SRN.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
BASE STATION - CONTROL HEAD INTER-WIRING	ENGINEER: A.F.C.	APPROVED: D.E.B.	DRAWING NO. RD515
	DRAWN: R.B.D.	DATE: 7-15-89	



NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
HIGH-LOW ANTENNA SWITCH FOR BASE STATION	ENGINEERi A.F.C.	tf>PROVEDi D.E.B.	DRAWING NO. RD 516
	ORftWNt R.B.D.	DATE* 7-15-8^	



NOTE:
1. ALL GROUND RODS TO BE NO SMALLER THAN 5/8" X 8* COPPERCLAD (COPPERWELD ROD #9438 AND #6540 ROD CLAMPS)
2. GROUND RODS MUST BE SEPARATED A MINIMUM OF THE COMBINED LENGTH OF THE RODS, WHERE PRACTICAL
3. GROUND WIRES SHOULD HAVE NO SHARP BENDS
4. ALL GROUNDS TO BE LESS THAN 1 OHM, IF POSSIBLE
5. GROUND RODS SHOULD NOT BE PLACED UNDER BUILDING

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
GROUNDING FOR COMMUNICATION EQUIPMENT BUILDINGS	ENGINEERi A.F.C.	M>PHQVEDs D.E.B.	DRAWING NO. RD 517
	DRAWN. R.B.O.	DATEi 7-15-8S	

NORFOLK SOUTHERN

ANTENNA LIGHTING

3- BASE STATION

DRAWN: R. CD

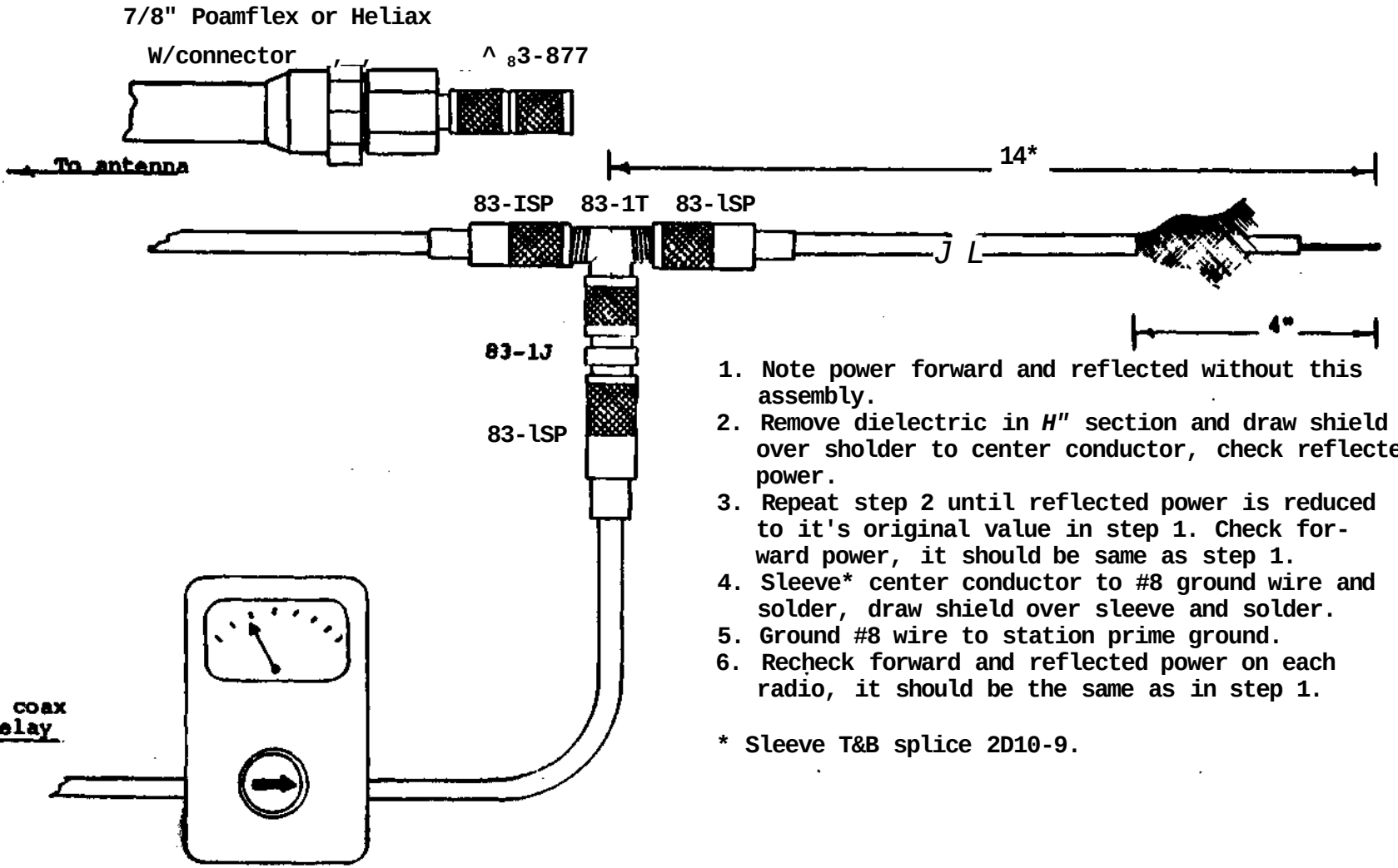
ENGINEER: A.F.C.

DATE: 7-1 00

APPROVED: O.E. CD

DRAWING NO. RD (J) CO

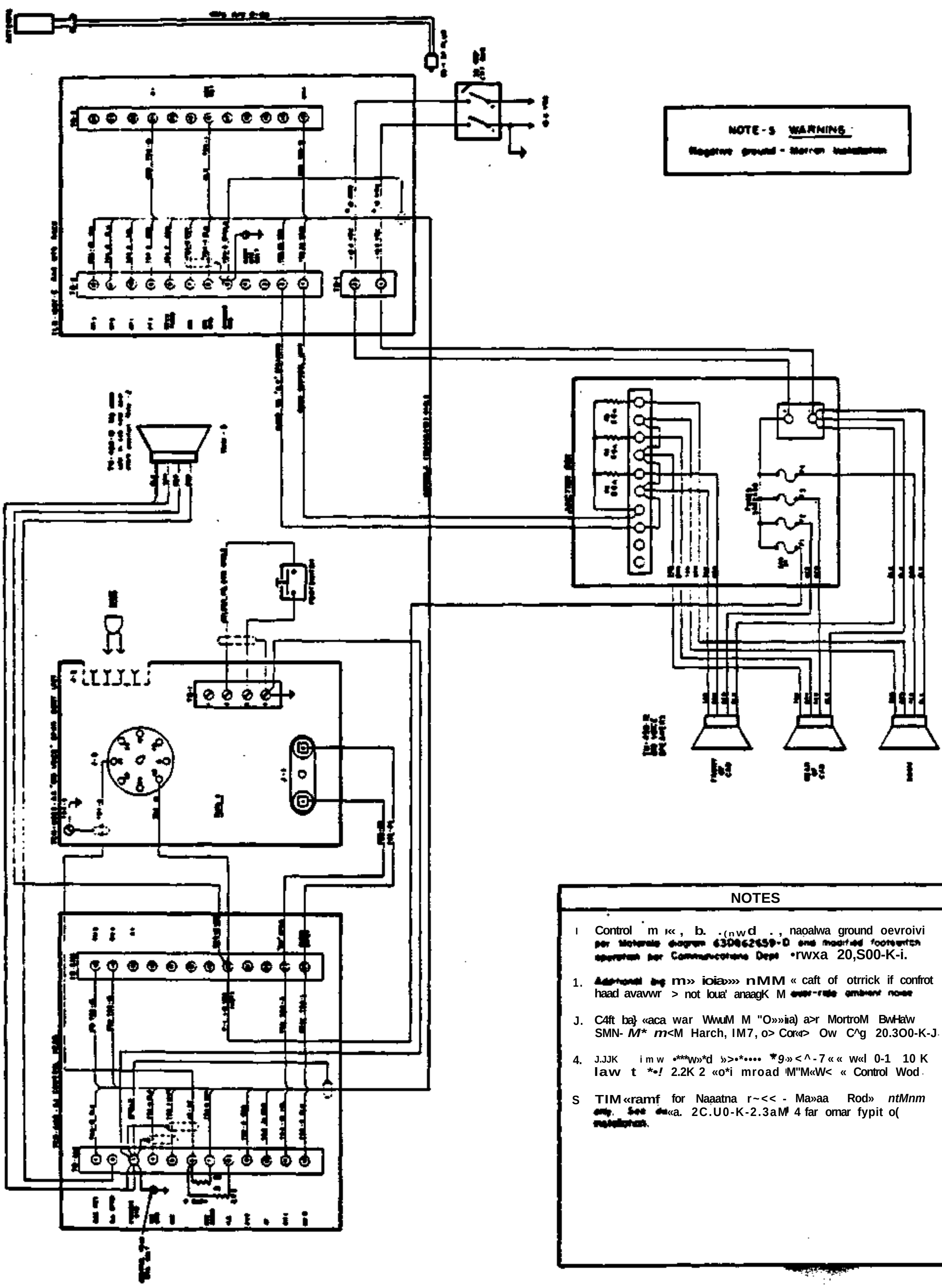
COMMUNICATIONS DEPARTMENT



1. Note power forward and reflected without this assembly.
2. Remove dielectric in *H"* section and draw shield j over sholder to center conductor, check reflected power.
3. Repeat step 2 until reflected power is reduced to it's original value in step 1. Check forward power, it should be same as step 1.
4. Sleeve* center conductor to #8 ground wire and solder, draw shield over sleeve and solder.
5. Ground #8 wire to station prime ground.
6. Recheck forward and reflected power on each radio, it should be the same as in step 1.

* Sleeve T&B splice 2D10-9.

All connector numbers listed are Amphenol, equivalent may be used.

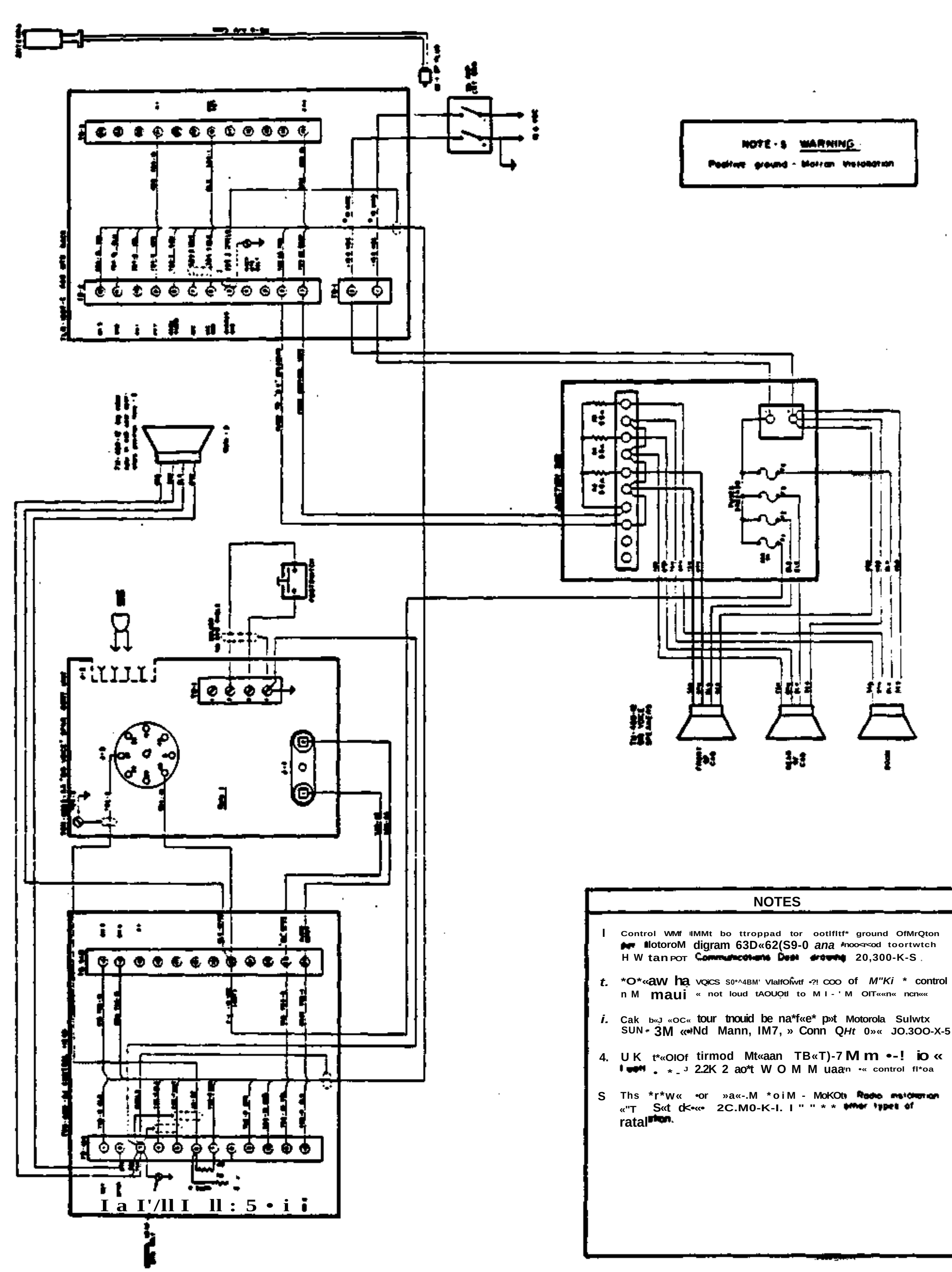


NOTES

1. Control m «, b. .(nwd . , naoalwa ground oevroivi per Motorola diagram 63D8262659-D and modified footswitch operation per Communications Dept •rwxa 20,S00-K-i.
2. m» ioia»» nMM « caft of otrrick if confrot haad avavwr > not loua' anaagK M over-ride ambient noise
3. C4ft ba} «aca war WwuM M "O»»ia) a>r MortroM BwHa'w SMN- M* m<M Harch, IM7, o> Cor«r> Ow C^g 20.3O0-K-J
4. J.JJK imw •***w»*d »>•*•••• *9»<^-7«« w«l 0-1 10 K law t *•! 2.2K 2 «o*i mroad M"M«W< « Control Wod
5. TIM«ramf for Naaatna r~<< - Ma»aa Rod» ntMnm only. See «a. 2C.U0-K-2.3aM 4 far omar fypit o(installation.

NORFOLK SOUTHERN	**COMMUNICATIONS DEPARTMENT**

RADIO INSTALLATION ON DIESEL DERRICK - NEGITIVE GROUND	ENGINEER: A.F.C.	APPROVED! D.E.B.	DRAWIM NO.
	DRAWNi R.B.D.	DATE! 7-15-89	**RD 519**



NOTES

1. Control WMf IMMt bo ttroppad tor ootlfltf* ground OfMrQton lotoroM digram 63D«62(S9-0 *ana* noo<r<od toortwtch H W tan POT Communications Dept drawing 20,300-K-S .

t. *O*«aw ha VQiCS S0*^4BM' VlalfOlwtf •?! COO of *M"Ki* * control n M maui « not loud tAOUOtl to M I - ' M OIT««n« ncn««

i. Cak b«J «OC« tour tnouid be na*f«e* p»t Motorola Sulwtx SUN - 3M «Nd Mann, IM7, » Conn Q*Ht* 0»« JO.3OO-X-5

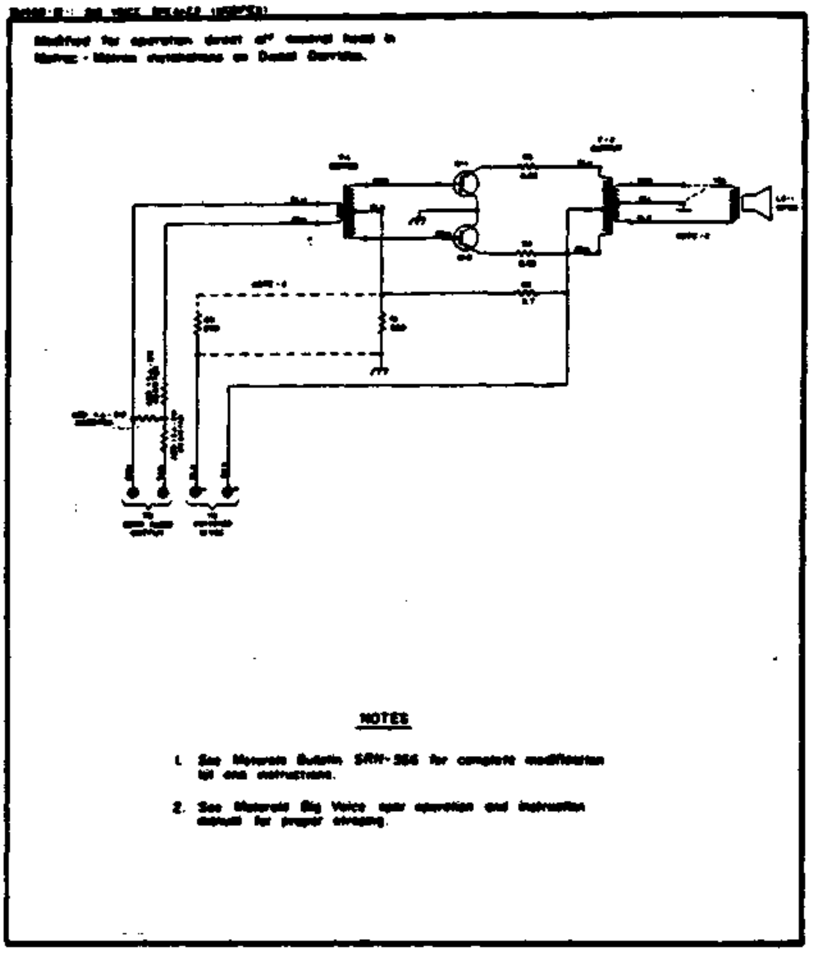
4. U K t*«OIOf tirmod Mt«aan TB«T)-7 M m •-! io « . * - J 2.2K 2 ao*t W O M M uaan •« control fl*oa

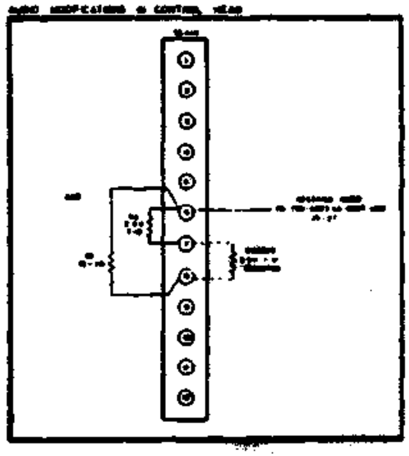
S Ths *r*W« •or »a«-.M *oiM - MoKOt Radio installation «"T S«t dk•«• 2C.M0-K-I. I " " * * other types of ratal ation.

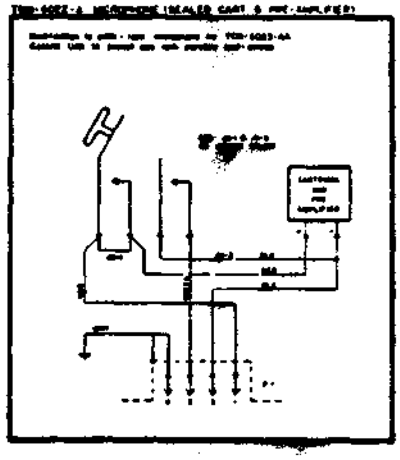
NORFOLK SOUTHERN

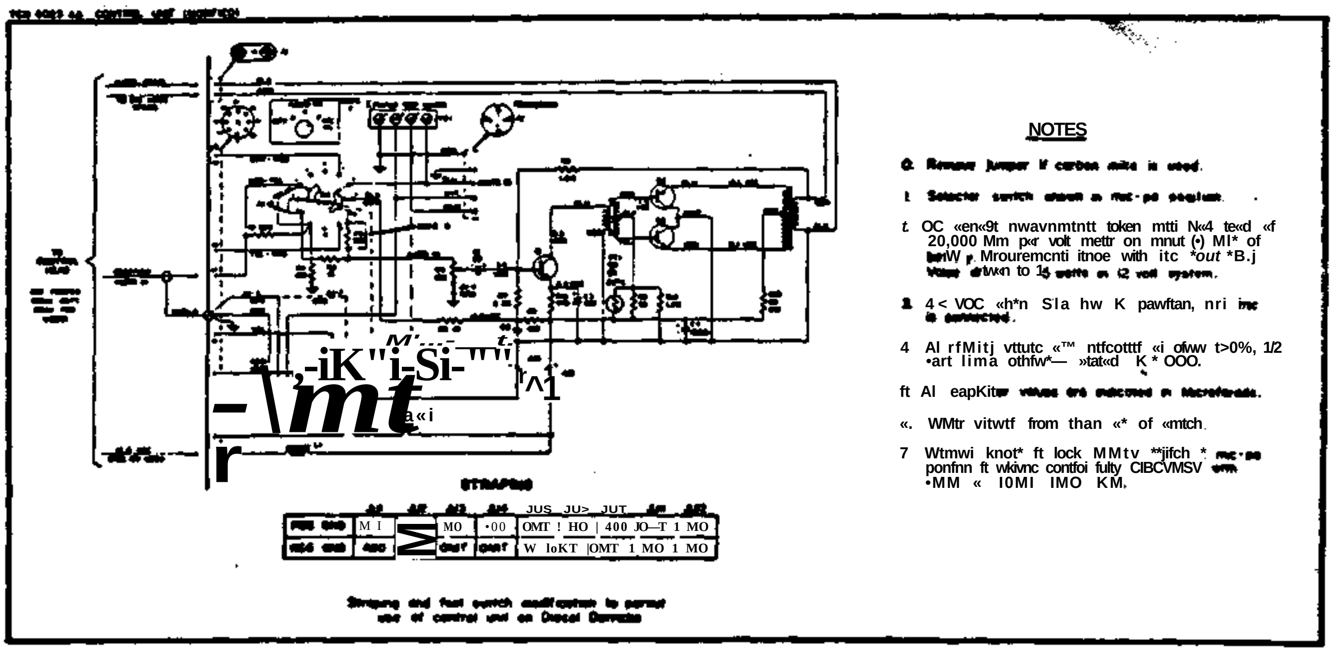
COMMUNICATIONS DEPARTMENT

RADIO INSTALLATION ON DIESEL DERRICK - POSITIVE GROUND	ENGINEER. A.F.C.	APPROVED. O.E.B.	DRAWING NO.
	DRAWN. R.B.D.	DATE: 7-15-8S	RD 520





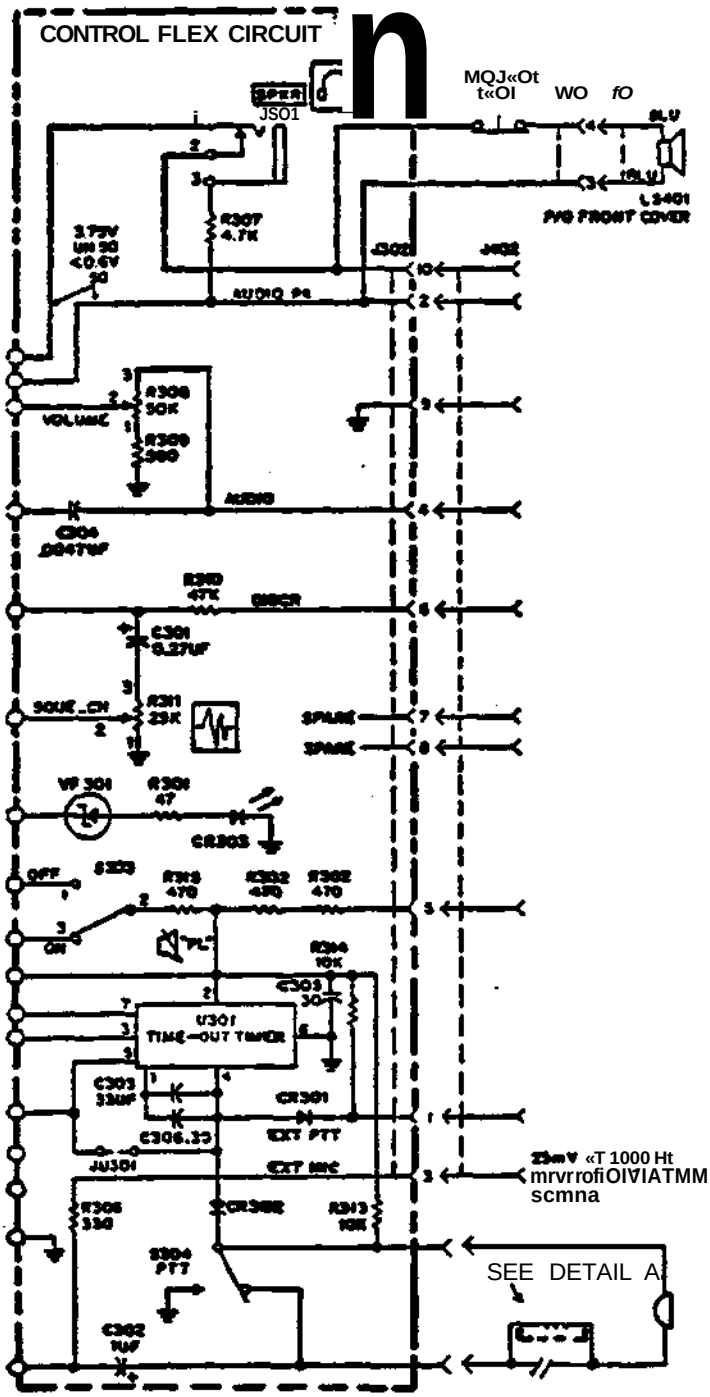


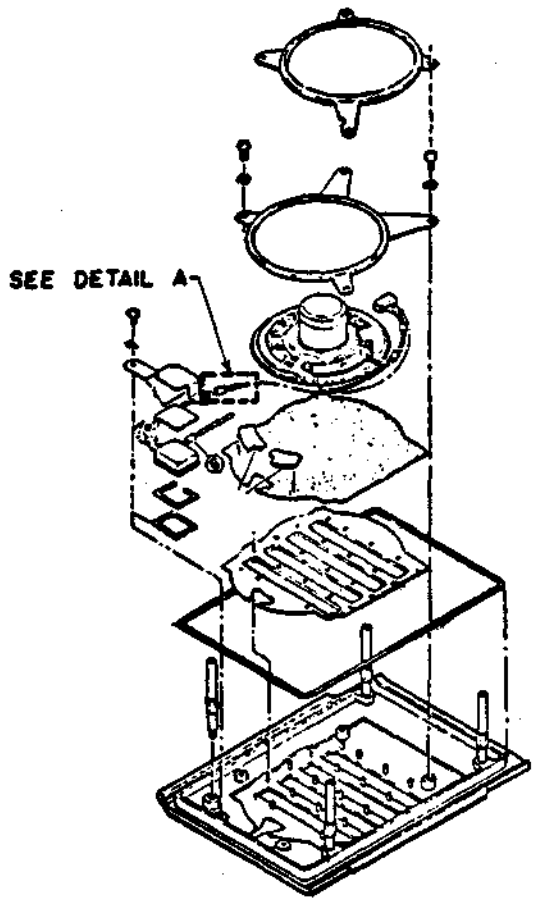


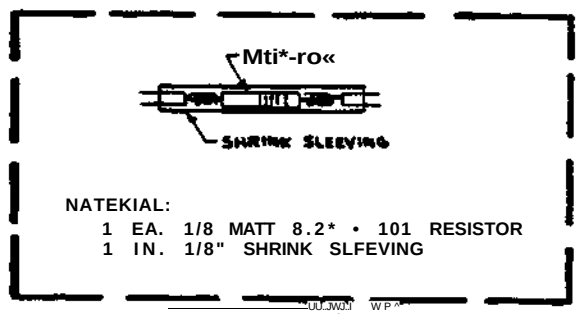
NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
DIESEL DERRICK RADIO INSTALLATIONS ACCESSORY MODIFIATIONS	ENGINEER: A.F.C.	APPROVED: O.E.B.	DRAWING NO. RD 521
	DRAWN: R.B.D.	DATE: 7-15-85	

THIS MODIFICATION SHOULD BI IN ALL TIX TETHTS -

DERRICK TRANSMIT ONLY UNITS TO DESENSITIZE THE MIKE, REDUCING FEEDBACK PROBLEMS FROM POWER VOICE SPEAKERS MOUNTED ON DERRICK.



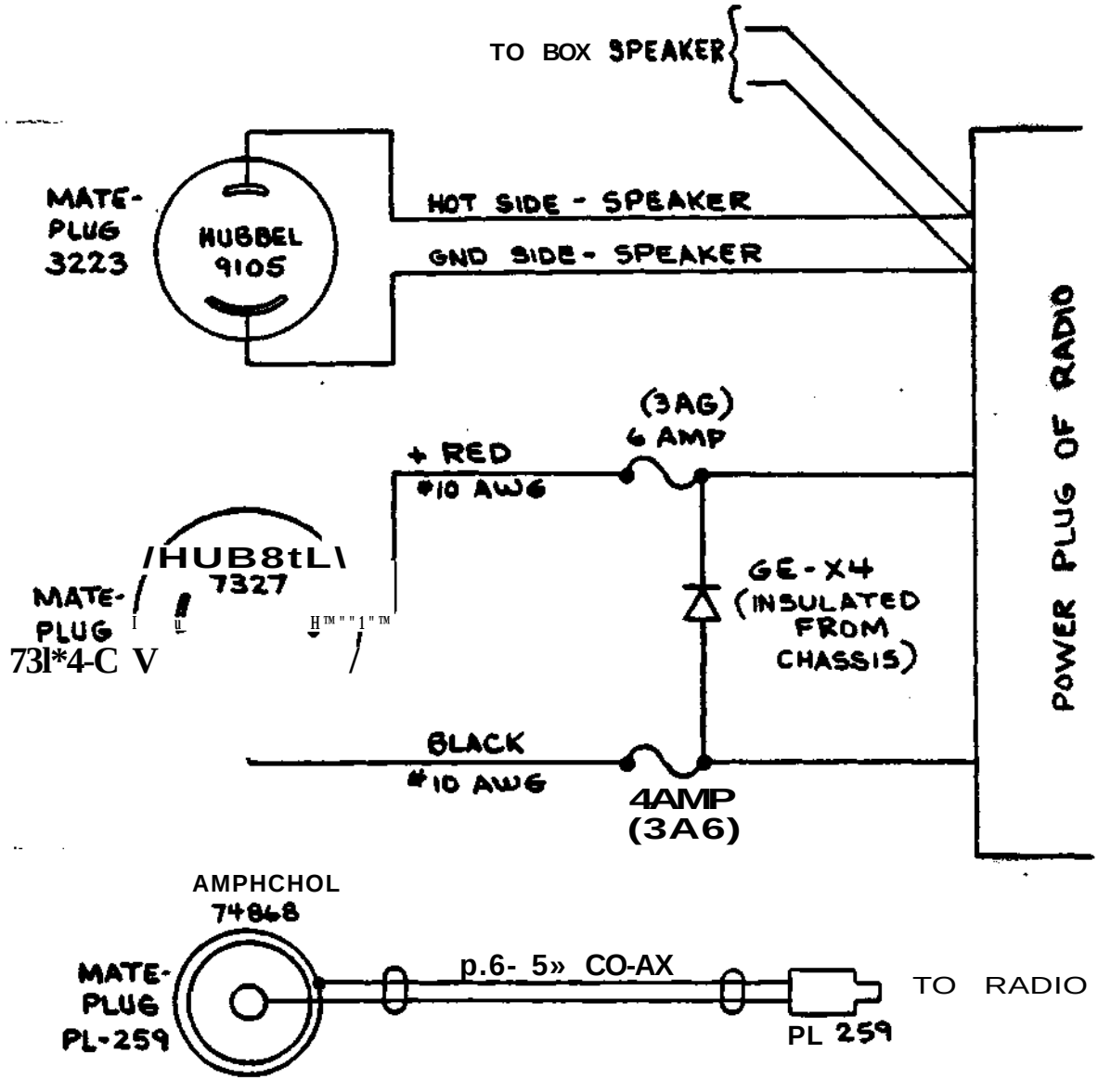




NATEKIAL:
1 EA. 1/8 MATT 8.2* • 101 RESISTOR
1 IN. 1/8" SHRINK SLFEVING

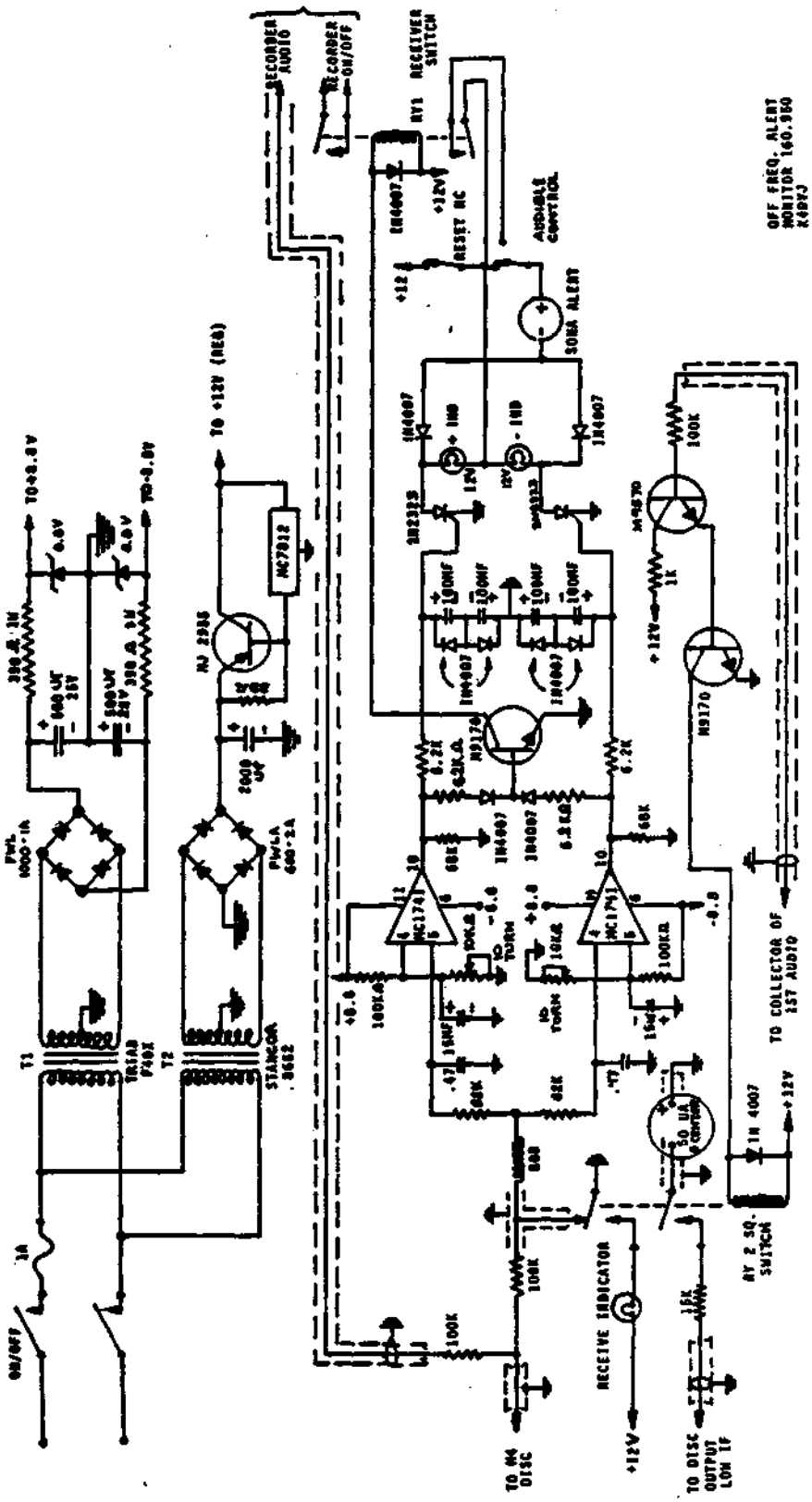
DETAIL A

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
DERRICK TX ONLY MX SERIES - MODIFICATION	ENGINEER! A.F.C.	APPROVED. D.E.B.	DRAWING NO. RD 522
	ORAWffa R.B.D.	DATE: 7-15-8S	



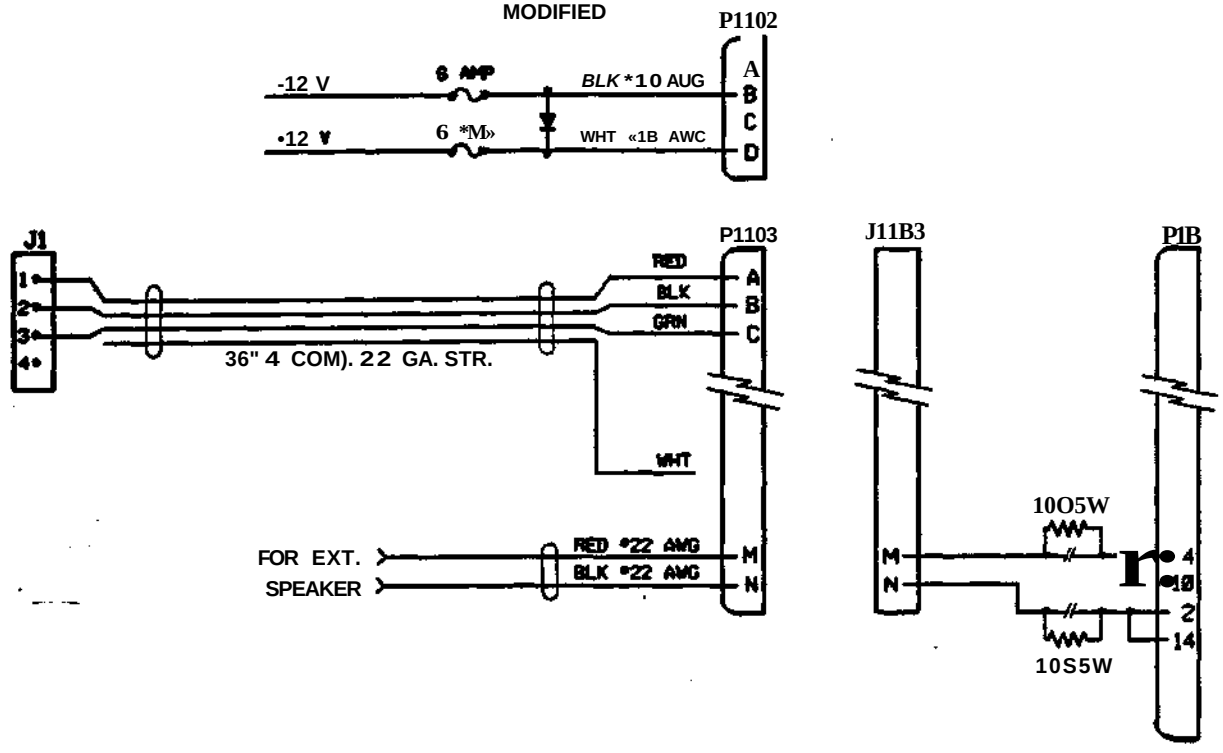
NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
MACHINE SET WIRING	ENGIfCERi A.F.C.	ftPPROVEDi D.E.B.	DRAWING NO. RD 523
	ORAWNi R.B.O.	DATE: 7-15-8S	

HO1O33H 01

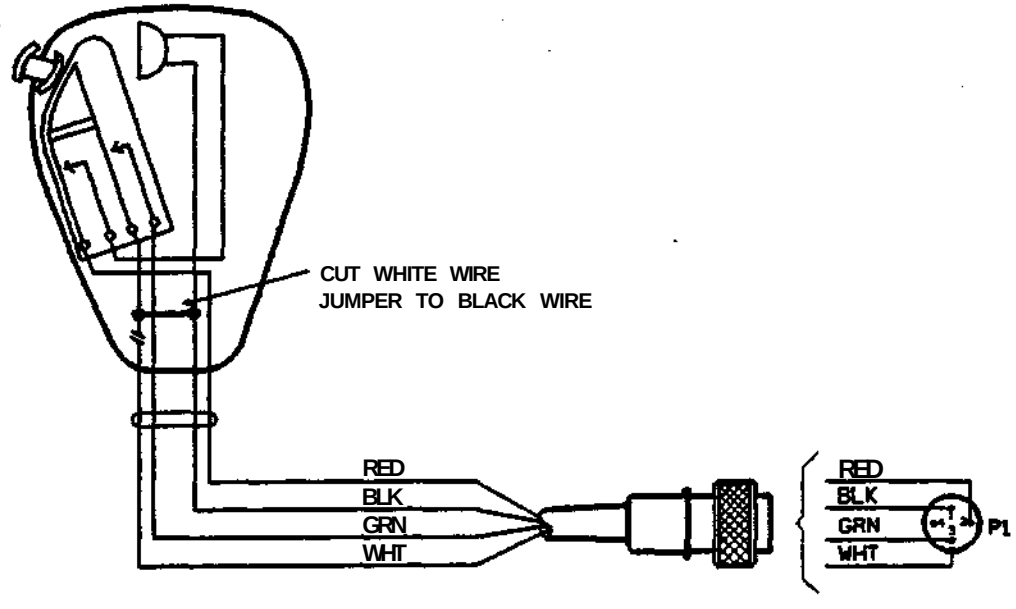


NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
FREQUENCY MONITOR - ALARM	ENGINEER: A.F.C.	APPROVED: D£.B.	DRAWING NO. RD 524
	DRAWN: R.B.D.	OATEJ 7-15-89	

TKN - 8118A
MODIFIED

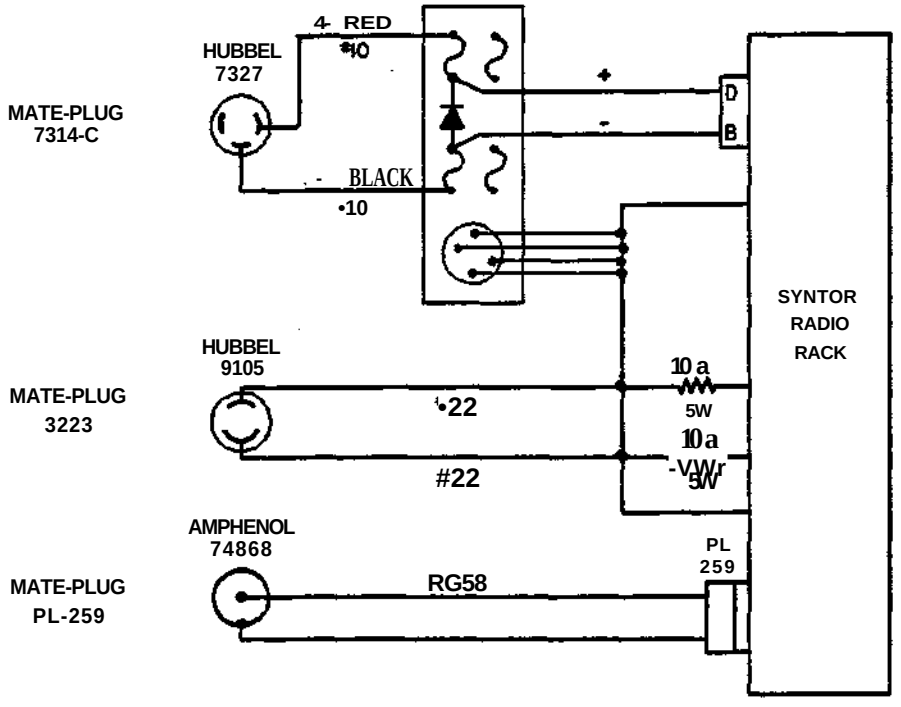


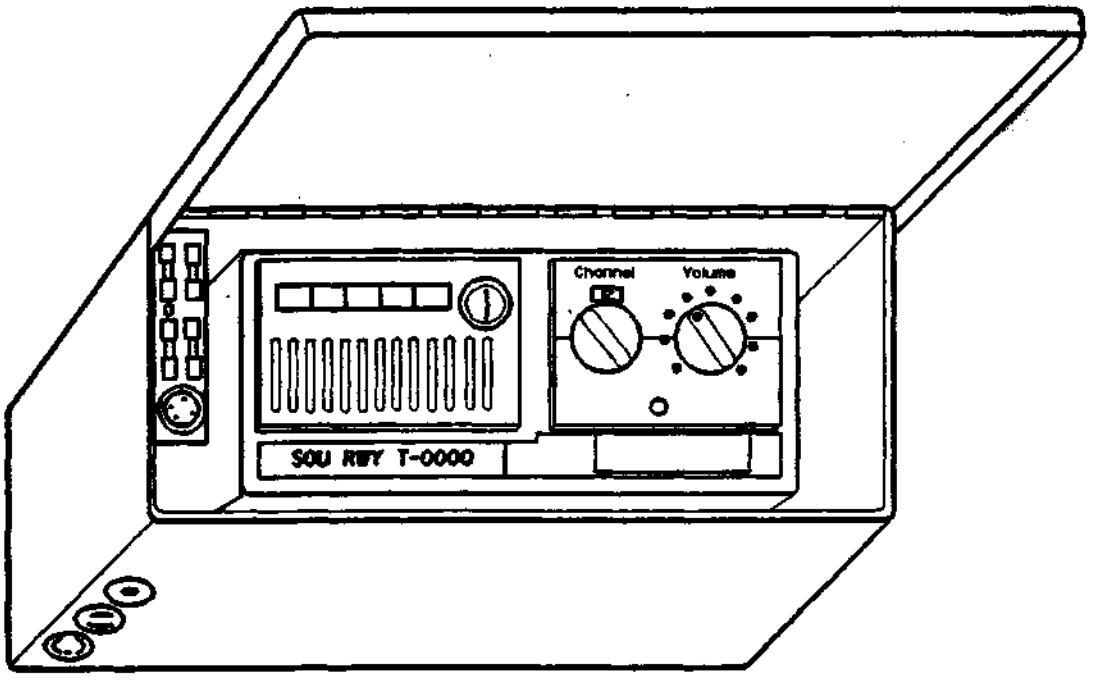
THN6O8A
MODIFIED



NOTE: MIKE MUST BE ISOLATED FROU GROUND SO UNIT WILL WORK WITH EITHER POSfTVE OR NEGfTIVE GROUND.

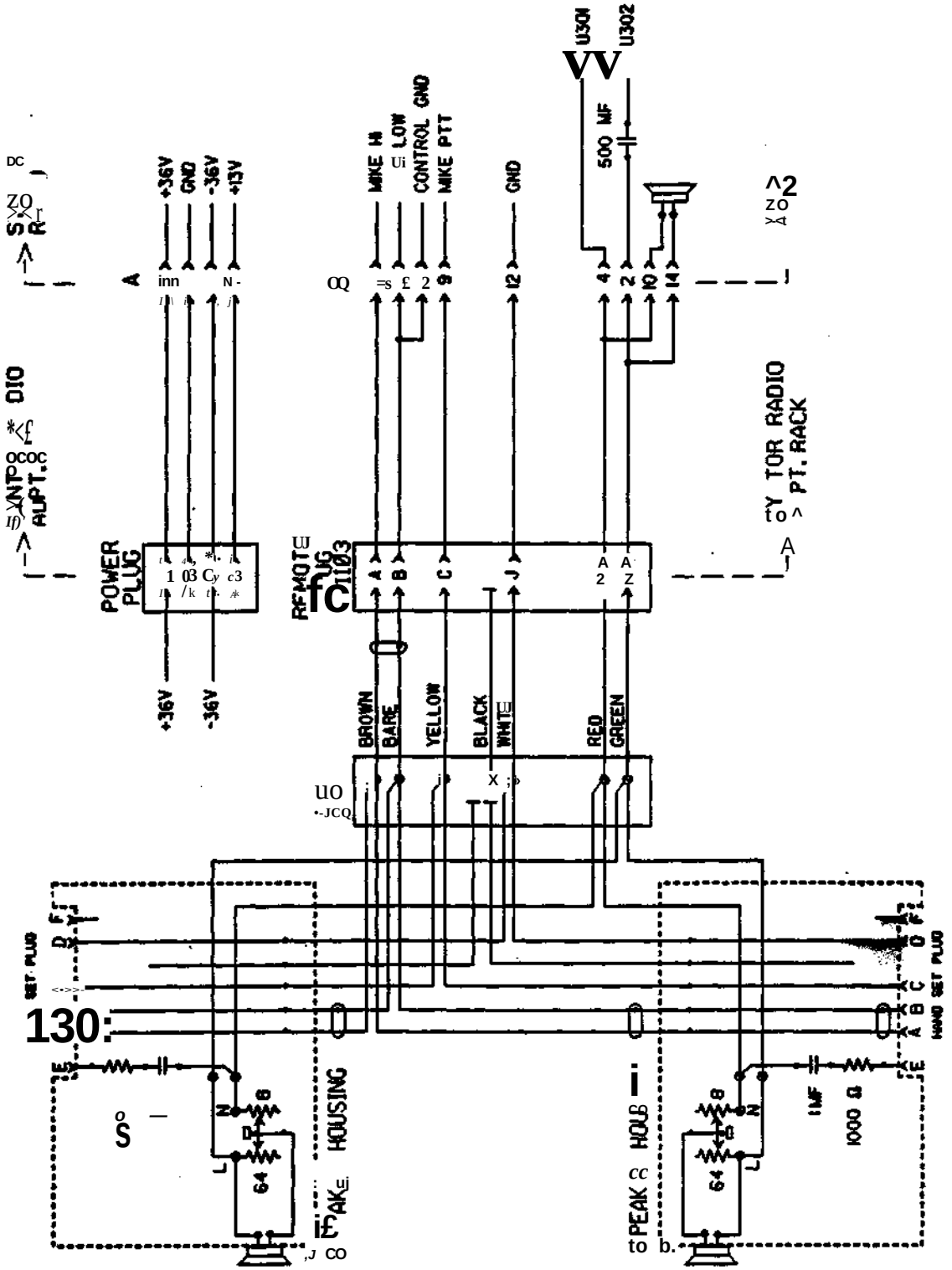
NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
MACHINE SET WIRING MIKE MODIFICATION & WIRING	ENGINEER: A.F.C.	APPROVED! D.E.B.	DRfIVING NO. *PC* 1 OF 2 RD 525
	DRAWN: R.B.D.	DATEi 7-15-8S	



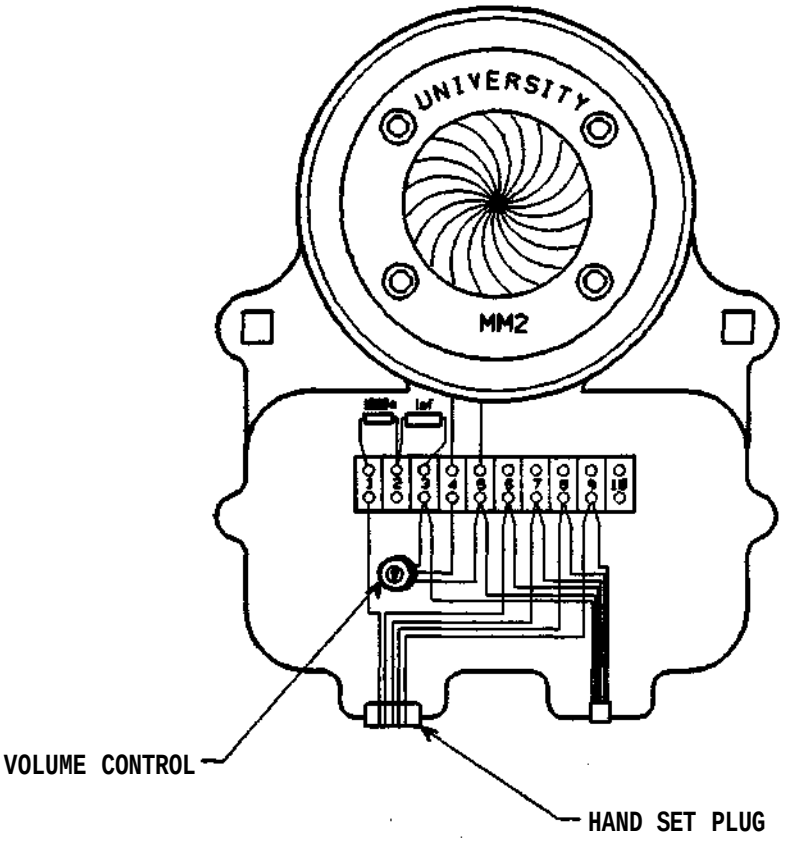


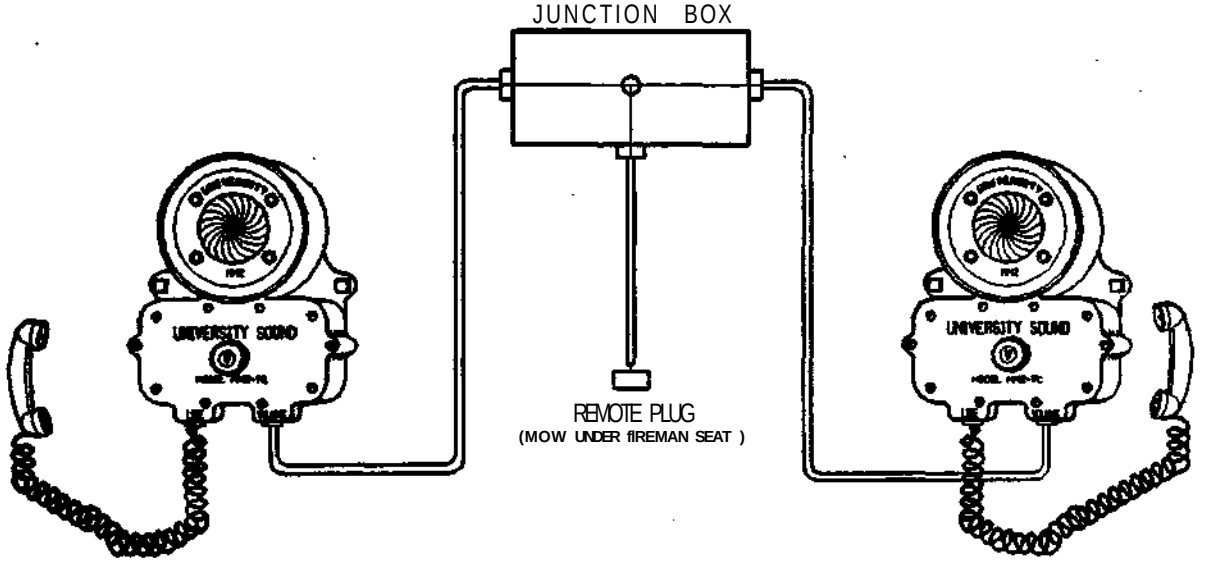
NOTE THIS RADIO MUST BE INSTALLED IN THE BOX SO THAT IT CAN WRK ON A MACHINE WITH EfTHER P0S(TNE OR NEGATIVE GROUND.*

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
MACHINE SET WIRING SYNTOR	ENGINEER: A.F.C.	APHHNEOi D.E.B.	DRAWING NO. PC 2 OF 2
	DRAWN: R.B.D.	DATEi 7-15-8S	RD 525

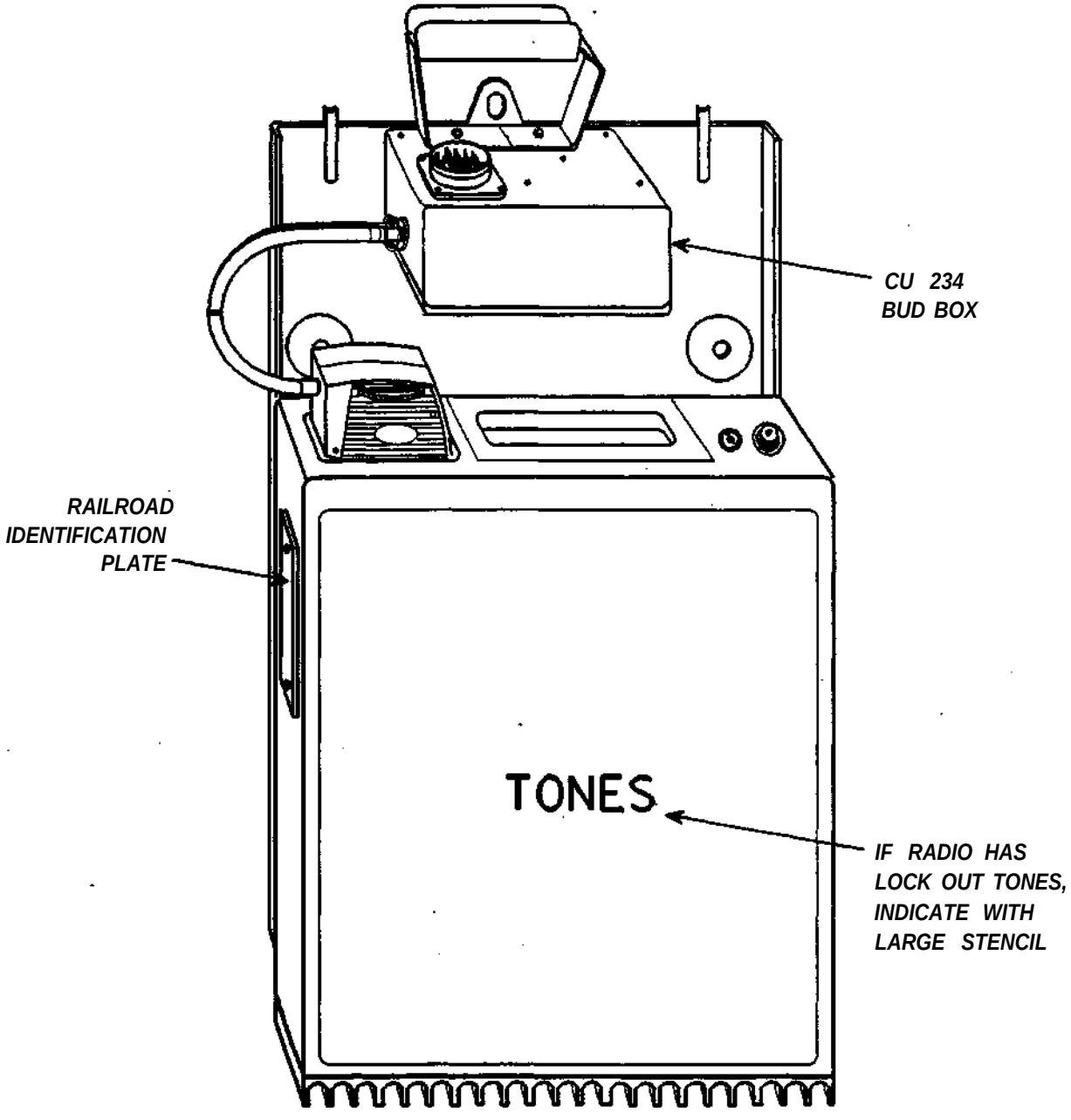


NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
RADIO WIRING - SYNTOR RADIO 611 STEAM ENGINE	ENGINEER: A.F.C.	APPROVED: D£.B.	DRAWING NO. PG 1 OF 2 RD 526
	DRAWN: R.B.D.	DATE: 7-15-8^	

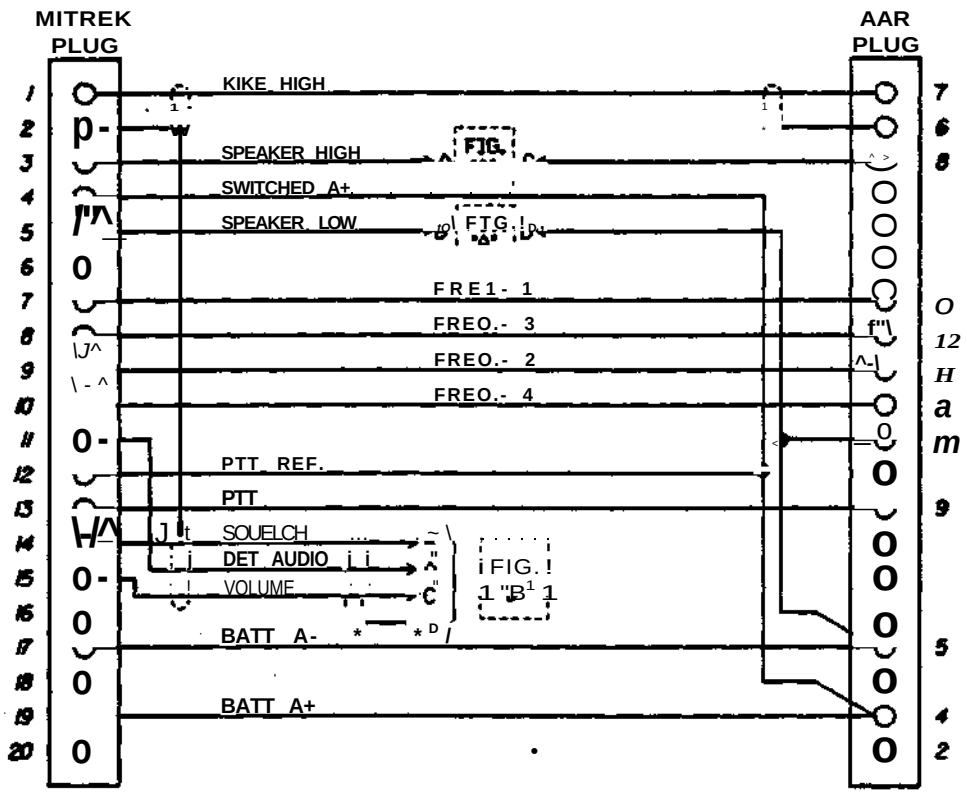




NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
RADIO WIRING - SYNTOR RADIO 611 STEAM ENGINE	ENGINEER: A.F.C.	APPROVED! D£.B.	DRfIWING NO. PG 2 OF 2
	DRAWN: R.B.D.	OATEJ 7-15-8S	RD 526



NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
AAR RACK 12 VOLT - MITREK	ENGINEER: ft.F.C.	APPROVED: D.E.B.	DRAWING NO. PG 1 OF 2
	DRAWN: R.B.D.	DATE! 7-15-8S	RD 527



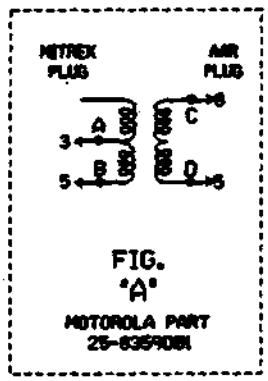


FIG. "A"
MOTOROLA PART 25-835908A

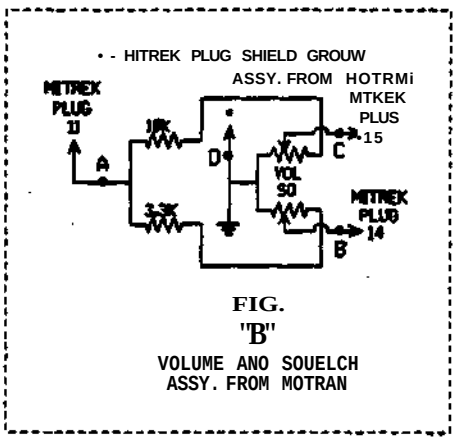


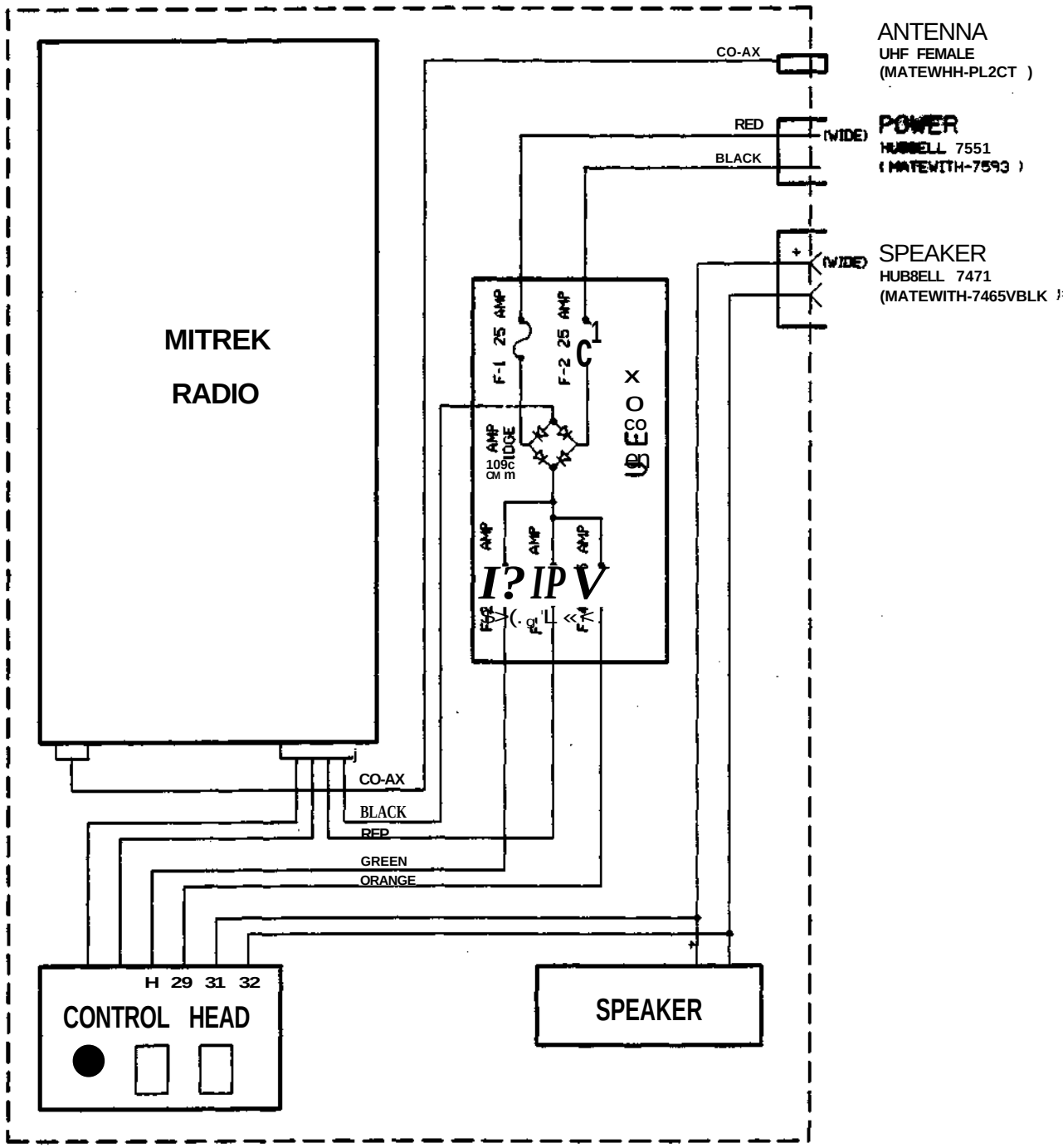
FIG. "B"
VOLUME ANO SOUELCH ASSY. FROM MOTRAN

NOTES:

1. REMOVE R431 FROM REC. Ba ADO 22K RESISTOR AND DIODE IN SERIES FROM P-10 END OF R431 TO JCT OF CR404.C427.C435.AND PIN 2 OF U401. (CATHODE OF ADDED DIODE TO CATHODE OF CR404).
2. HLN4181A BOARD. JU5 IN JU4 OUT (SOUELCH DISABLE IN). CUT PLATING FROM PIN 4 OF P-3.
3. ONE FREQUENCY RADIO IS STRAPPED FOR FI INSIDE OF RADIO - BE SURE THIS STRAP (JU611) IS REMOVED.

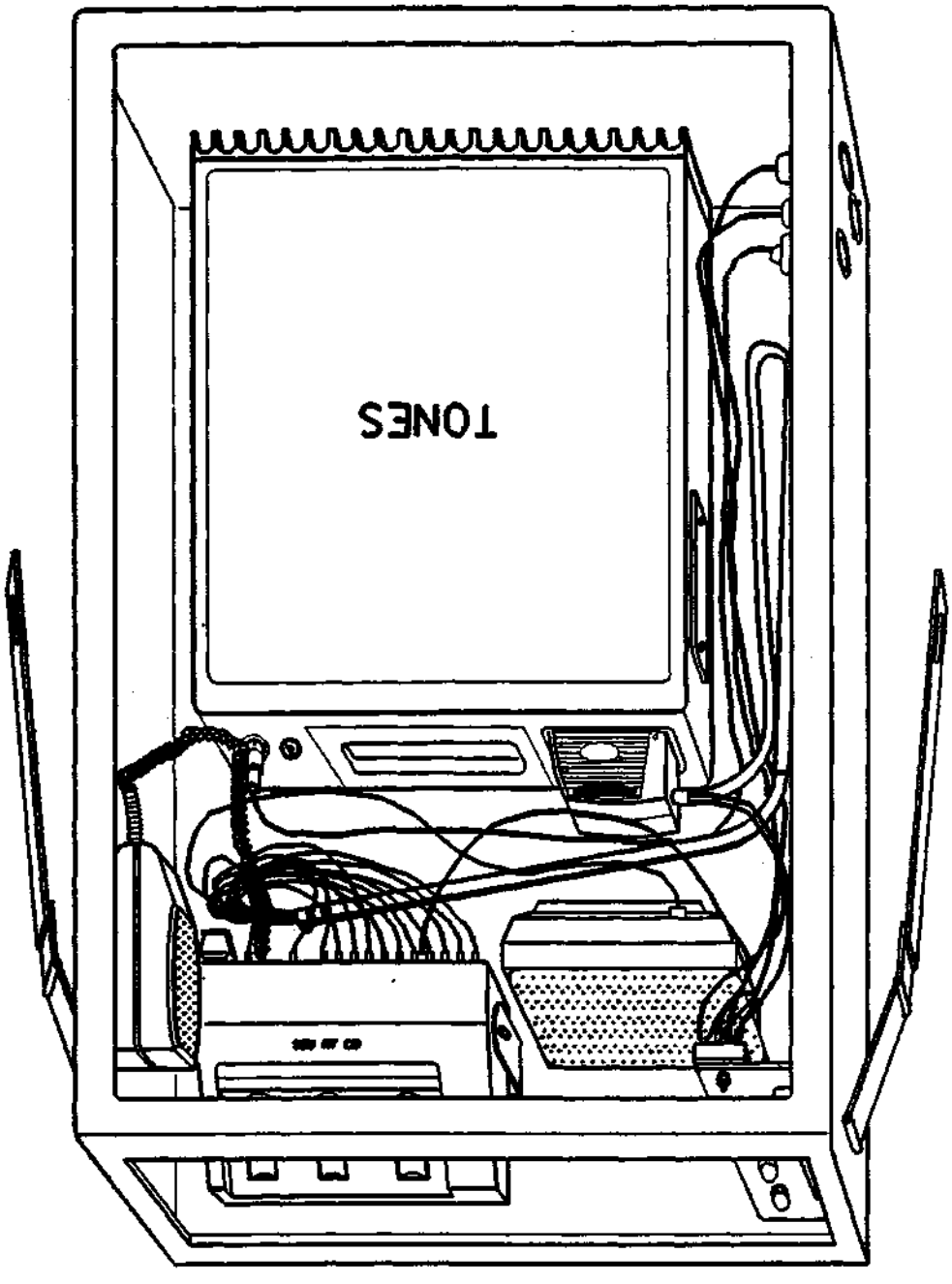
NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
AAR RACK 12 VOLT - MITREK	ENGINEER: 6.F.C.	APPROVED: D.E.B.	DRAWING NO. PG 2 OF 2
	DRAWN: R.B.D.	DATEi 7-15-8S	RD 527

MITREK RADIO BOX



NOTEI CHECK FOR FLOATING WOUND.
EITHER NEG GROUND BATTERY OR POS GROUND BATTERY SHOULD WORK ON THIS RADIO.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
MACHINE SET - MITREX	ENGINEER: A.F.C.	APPROVED! D£.B.	DRAWING NO. PGw 1 OF 2
	DRAWN: R.B.D.	OATE: 7-15-89	RD 528

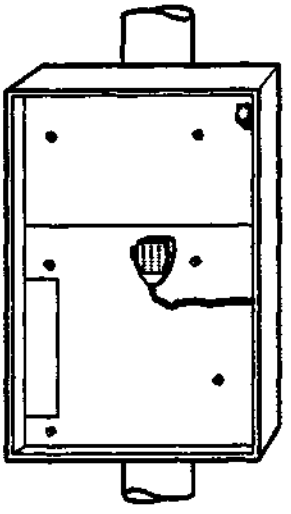


NORFOLK SOUTHERN

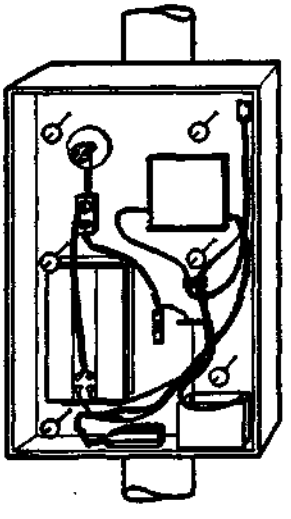
COMMUNICATIONS DEPARTMENT

MACHINE SET - MITREX

ENGINEER:	APPROVED:	DRAWING NO. P0.2 OF 2
A.F.C.	D.E.B.	
DRAWN:	DATE:	RD 528
R.B.D.	7-15-89	

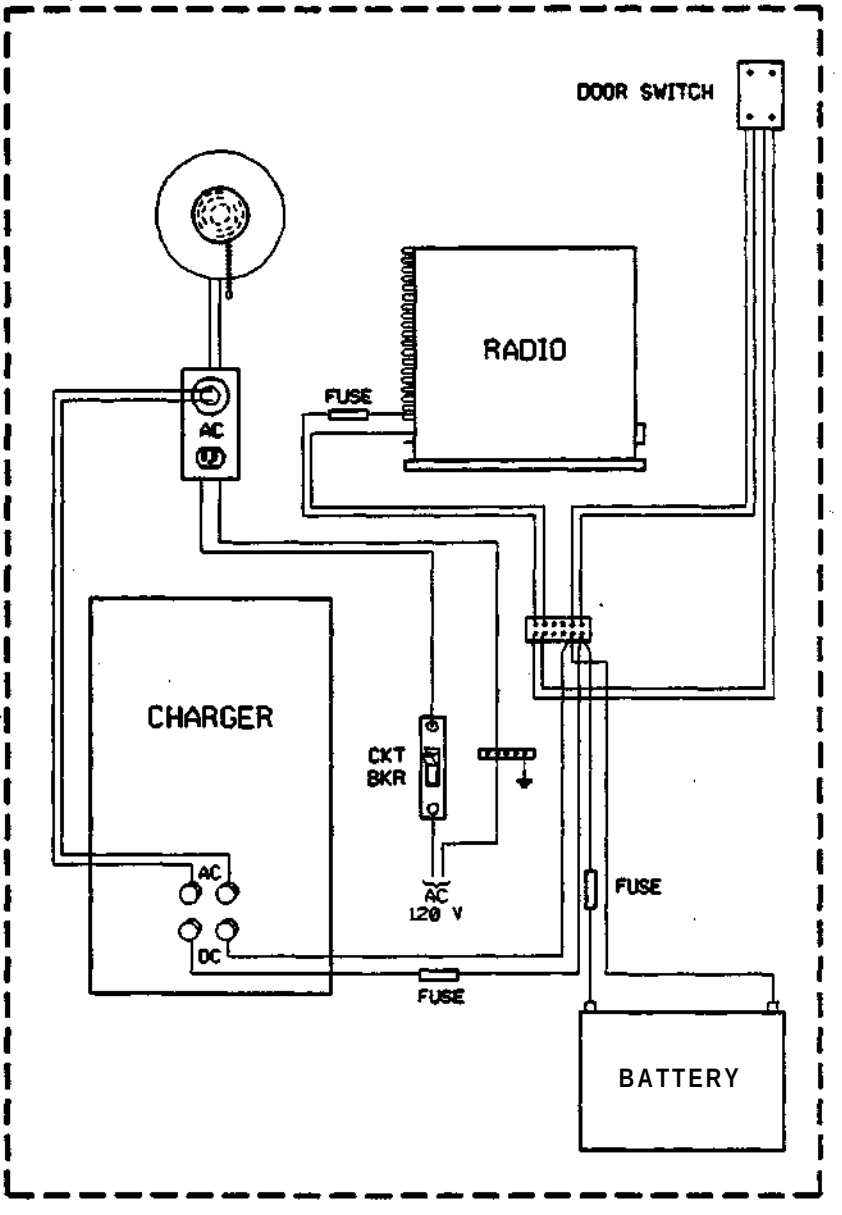


VIEW
WITH BACKBOARD



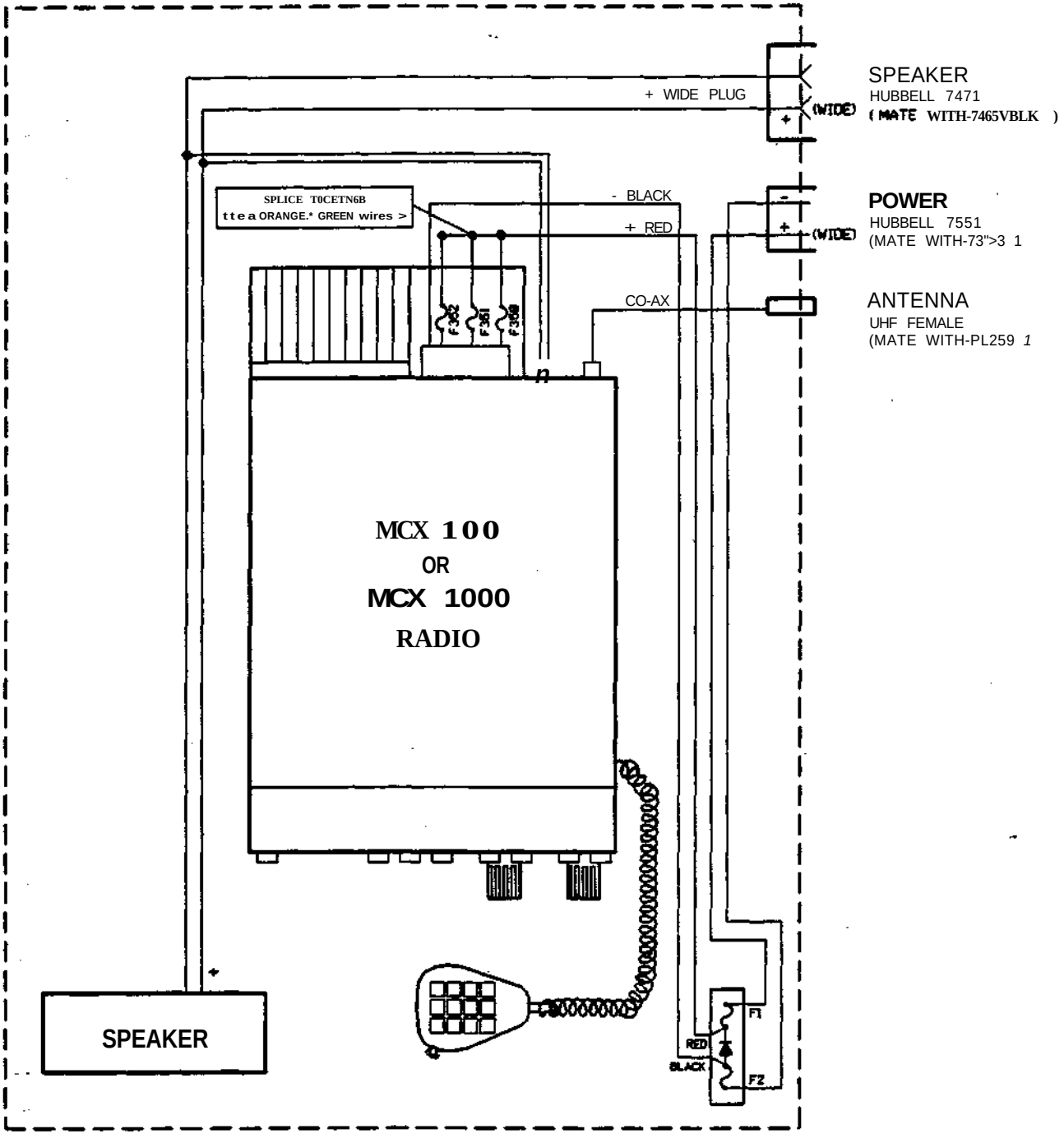
VIEW
BACKBOARD REMOVED

CALL BOX SCHEMATIC



NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
TYPICAL - CALL BOXES	ENGINEER A.F.C.	APPROVED: D.E.B.	DRAWING NO. RD 529
	DRAWN: R.B.D.	OATEi 7-15-8S	

MCX 1000 RADIO BOX

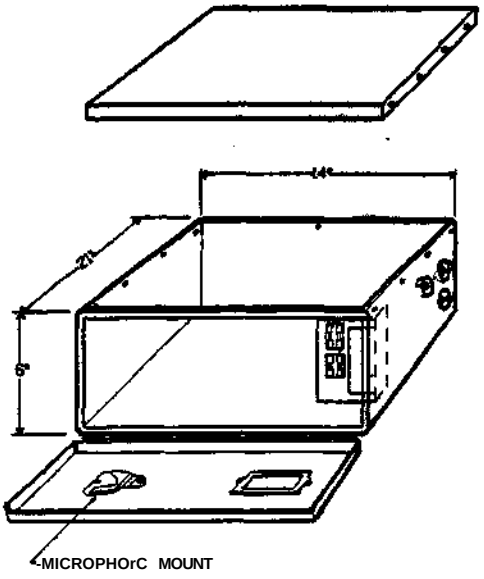


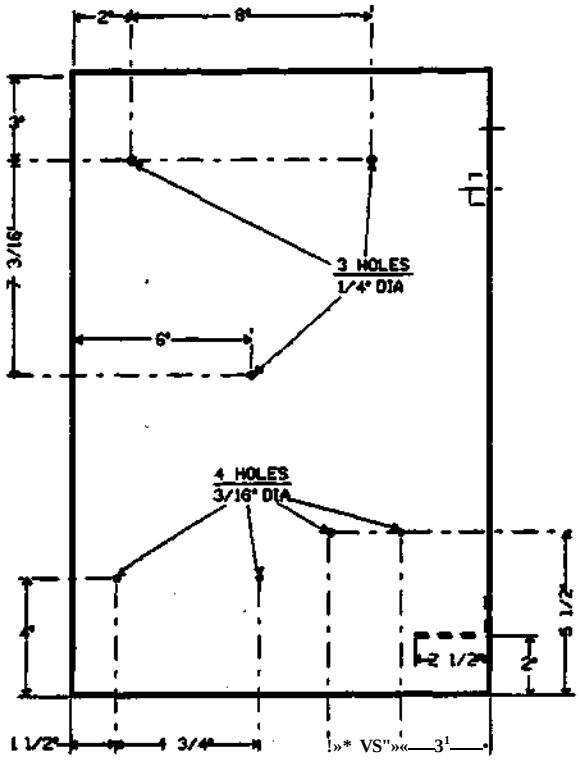
NOTES

	RED	20 AMP	F350	RED	15 AMP	F352	ORANGE	1 AMP
F2	BLACK	20 AMP	F361	GREEN	3 AMP			

NOTE: STENCIL ' NEG GND ONLY ' ON BOX.

NORFOLK SOUTHERN	COMMUNICATIONS DEPARTMENT		
MACHINE SET - MCX 100 OR MCX 1000	ENGINEER: A.F.C.	flPPROVEDi D£.B.	DRAWING NO. RD 530
	ORAWN: R.B.D.	OATEi 7-15-8S	

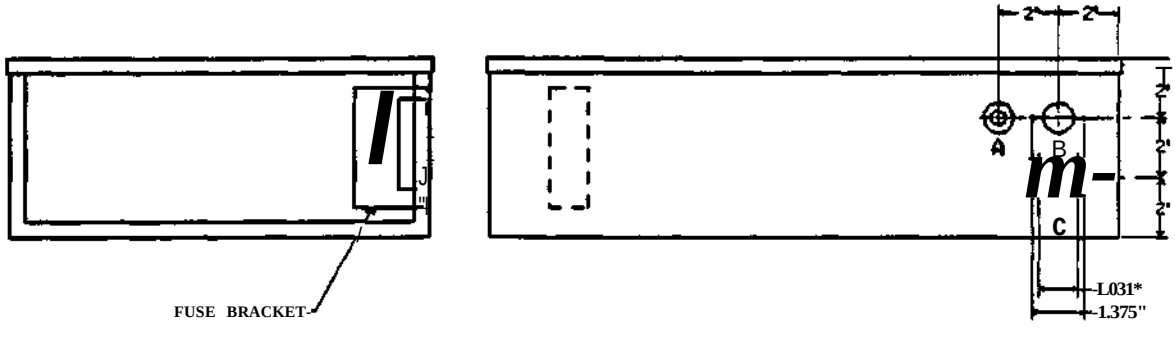




A - ANTENNA

B - POWER - (DRILL 1.2CTDIAJ

C - SPEAKER- (DRILL 1.031" DIAJ



ssss^kmm* NORFOLK B^SSSSE^&WZF SOUTHERN	COMMUNICATIONS OEPARTMENJ		
RADIO BOX FOR MITREK AND MCX SERIES	ENGINEER. A.F.C.	APPROVEDi D.E.B.	DRAWING MO. RD 531
	" ^ R.B.D.	OATEi 7-15-8^	

Section 6

Bulletins

SECTION VI - BULLETINS

BULLETIN NUMBER 90-001

AFFECTIVE JULY 9, 1990

All radios Assigned to the Norfolk Southern Police Department will from this day forth be engraved 'POLICE DEPT' or 'POLICE'. This refers to the engraving that is included on the radio along with the Railroad Radio Identification Number (RRID), Owning Railroad and whatever the Radio Instruction Manual requires for each particular radio.

The only acceptable engraving for the Norfolk Southern Police Department will be 'POLICE DEPT' or 'POLICE'. If for any reason these instructions cannot be followed contact the Senior Communications Engineer's office for instructions.

The abbreviation in RIS for 'POLICE DEPT' has been 'P&SS'. The new abbreviation that RIS will accept is 'POLD' for 'POLICE DEPARTMENT' radios. All existing 'DEPARTMENT/POOL' codes have been changed so new information will be required to follow these instructions.

As described in Section II under RIS instructions, if anyone is unsure of the acceptable input for a particular field move the cursor to that field and hit 'F7' or 'PF7'. This will display an edit table listing all acceptable input.

A. F. Cox

Subject: Radio Service Bulletin

Atlanta - November 16, 1990

019-000

Radio Shop Supervisors:

T. Bible	**(CHGA)**	**M. E.** Liles	(KNOX)
J. J. Brighi	**(RALE)**	E. **N. Lowe**	(NORF)
M. W. Croshaw	**(CHAR. SPNC)**	**D. M.** Mallott	(BELE)
H. B. Davis	**(BMHM)**	S. L. Martin	(ROKE)
R. A. Gallop	**(KACI. MOBR, STLO)**	**J. K. Murphy**	(JACK.MACN)
P. B. Gibson	**(FTWF.** CHGO)	T. L. Nesbit	(COLA)
H. P. Guess	**(SAVH)**	J. D. Roberts	(DETR)
J. A. Hall	**(ANDV)**	**W. J. Schlake**	(CINC)
P. M. Hare	**(NORL)**	L. **R.** Showalter	(LYBG)
R. B. Harris	**(ASHV)**	**H. H.** Stanley	(SHEF)
R. M. Hoffman	**(LSVL)**	**R.** S. **Ward**	(DECA)
G. E. Johnson	**(CLEV. CONN)**	**F. D.** Watkins	(BLFD. WMSN)
G. B. Kendrick	**(PORT)**	C. **A.** Wilson	(ATLG)
R. K. Lebon	**(MNSE)**		

Copies of Motorola Service and Repair Note Bulletins. SRN-1072A and **SRN1082A are attached as information for each radio shop.**

J. F. Norris

Copies: Mr. E. L. Sweeney
***Jff.* D. L. Scott**
***Mr. A. F. Cox**

Attachments

SERVICE AND REPAIR NOTES

bulletin

MOTOROLA

COMMUNICATIONS AND fIfCTftONICS, INC.
A SUBSIDIARY OF MOTOROLA, INC.

TECHNICAL INFORMATION CENTER • 8000 W. SUNRISE BLVD. • FT. LAUDERDALE. FL 33322 • (305)475-6170

Portable Products
SRN- 1072A
APC- 751
September 1990

Memo To: SRN Mailing list

From: Ray Melendez

Subj: PROGRAMMING VHF WIDE BAND-MT1000 RADIOS

»»»***»*•*»**** (PATTTinTflDM **********

Programming MT1000 VHF "C Model" Wide Band radios, requires Radio~ Service Software (RVN4017D or RVN4018D) version.

Model Identification

H33GCU/H43GCU7100£N

or

H33GQ/H43GCJ7190CN

Note: "C Model" VHF Wide Band (146 - 174) radios are not cloning compatible with "A or B Model" radios.

This SRN is for information only and no warranty parts or labor is offered.

If applicable, enter this information or note this **bulletin** number and subject material in the appropriate equipment instruction manuals **and** make necessary schematic diagram changes.

Enter this bulletin in the correct MASTER and CLASSnSfD mmCEs for **future** reference.

SERVICE AND REPAIR NOTES

bulletin

(M) MOTOROLA

COMMUNICATIONS AND ELECTRONICS, INC.

A SUBSIDIARY OF MOTOROLA, INC.

TECHNICAL INFORMATION CENTER • 8000 W. SUNRISE BLVD. • FT. LAUDERDALE. FL 33322 • (305)475-6170

SRN- 1082
APC- 546,749,751
September 1990

Memo To: SRN Mailing list

From: Jerry Davis

Subject MTIOOO ZERO SCAN SQUELCH SETTING

MTIOOO radios shipped between the following dates July 19-201990 (xxxAQPxxxx) and August 2-31990 (xxxAQQxxxx) might have shipped with the scan squelch setting set to zero. This will affect scan operation. The radio will open squelch on the first channel in the scan list and it will not continue scanning the assigned scan channels.

The corrective action for this error is to reprogram the scan squelch setting to the same value as the carrier squelch setting using Radio Service Software (RVN4017 for 51/4 inch disk or RVN4018 for 31/2 inch disk). The following procedure should be used to correct this error.

1. Setup the MTIOOO radio and Radio Service Software to reprogram the radio.
2. Read the radio from the GET/SAVE menu.
3. Go to the SERVICE MENU and then to the SQUELCH AND VOLUME **ALIGNMENT** screen.
4. Change the SCAN SQUELCH value fiojnzeiQ to the same, salue. as the CARRIER SQUELCH value.
5. Reprogram the radio (F8).

The MSS is authorized to reprogram radios with this condition for one half hour of Jabofv-No warranty parts are intended.

Jerry Davis
--Prodtict^Sefvices,
Plantation

If applicable, enter this information or now this buHetiri number and subjact material in the appropriate equipment instruction manuals **and make m i w i i y schwnatic diagiaw changat.**

Enter thâi bulletin in the correct MASTER and CLASSIFIED INDICES for future reference.

Atlanta - December 12, 1990

Radio Shop Supervisors:

Attached is a drawing of the Spectra clean cab radio with engravings. There are three locations for markings. Follow these instructions on all Spectra clean cab radios.

The software for this radio is on order for selective shops (Motorola part number MBRVN4000ASP). Do not use any other version of software on these radios. Load the software on the c:\ drive under this path (C:\MRSS\SPECTRA.CC). Included on this software diskette will be loading instructions which will create the directories and copy all files.

After receiving the program notify this office and I will supply you with a file (A818PQW4.549) of a radio that has been programmed properly. When programming new radios for service or reprogramming existing radios, load this file from the archive disk file and change the name of home channels 7, 8, and 9 to display the Railroad Radio ID (such as T1000, see example on attached sheet). This will give the user the ability to select Home channels 7, 8 or 9 to display the Railroad Radio ID. Once the file has been changed to display the Railroad Radio ID you can clone the radio characteristics to another radio by going to the 'GET / SAVE MENU' and selecting F5.

If you have any questions about the engraving or programming call R.E. FultS at 7-529-1263.

A. F. Cox

Models R43KME1170AD CONVENTIONAL EXPANDED
Serial: 818PQW4549 VHF
Software: 50 W

CHANGE/VIEW:RADIO:HOMEMODES SCREEN PRINT UTILITY

HOME MODES (CHANNELS)

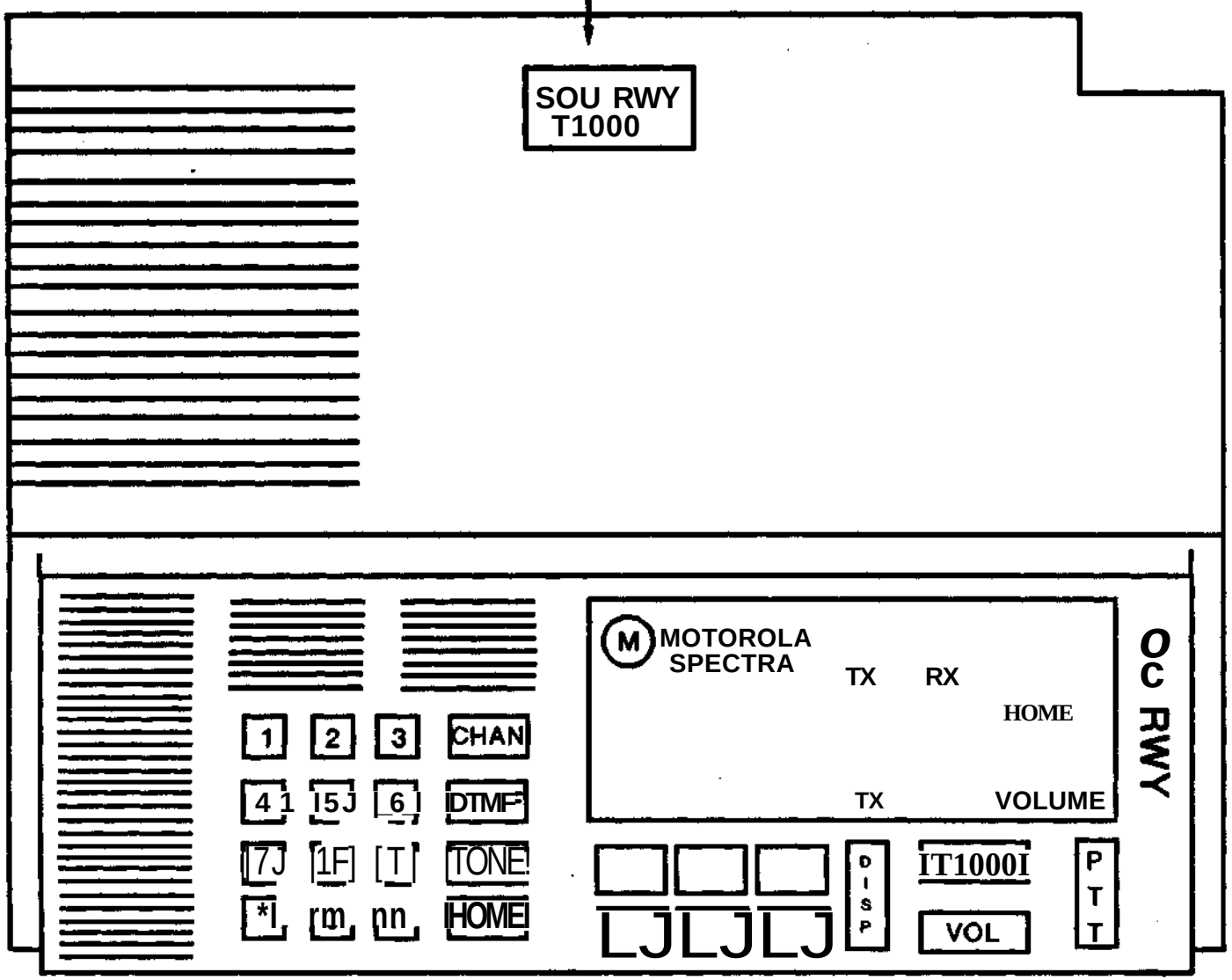
HOME MODE 09

KEYPAD	NAME	Tx	Rx	Disp	Status
1	78 7S	7S	7S		NO TONE
a	76 76	76	76		NO TONE
3 ·aa .	as ff	SS	SS		NO TONE
M" ·mm .	56 56	56	56		NO TONE
Zj maa .	48 09	48	09		NO TONE
o « ···	9E 9S	9S	9S		NO TONE
1	T1000	01	01		NO TONE
8 ··m .	T1000	01	01		NO TONE
9	T1000	01	01		NO TONE

channels 7, 8 + r should indicate the ffllP assigned to the Spectra radi(p. . . .

ENGRAVE SOU RWY OR N&W RWY
AND THE T NUMBER

* ENGRAVE THE T NUMBER ON THE TAB ABOVE THE VOLUME BUTTON.

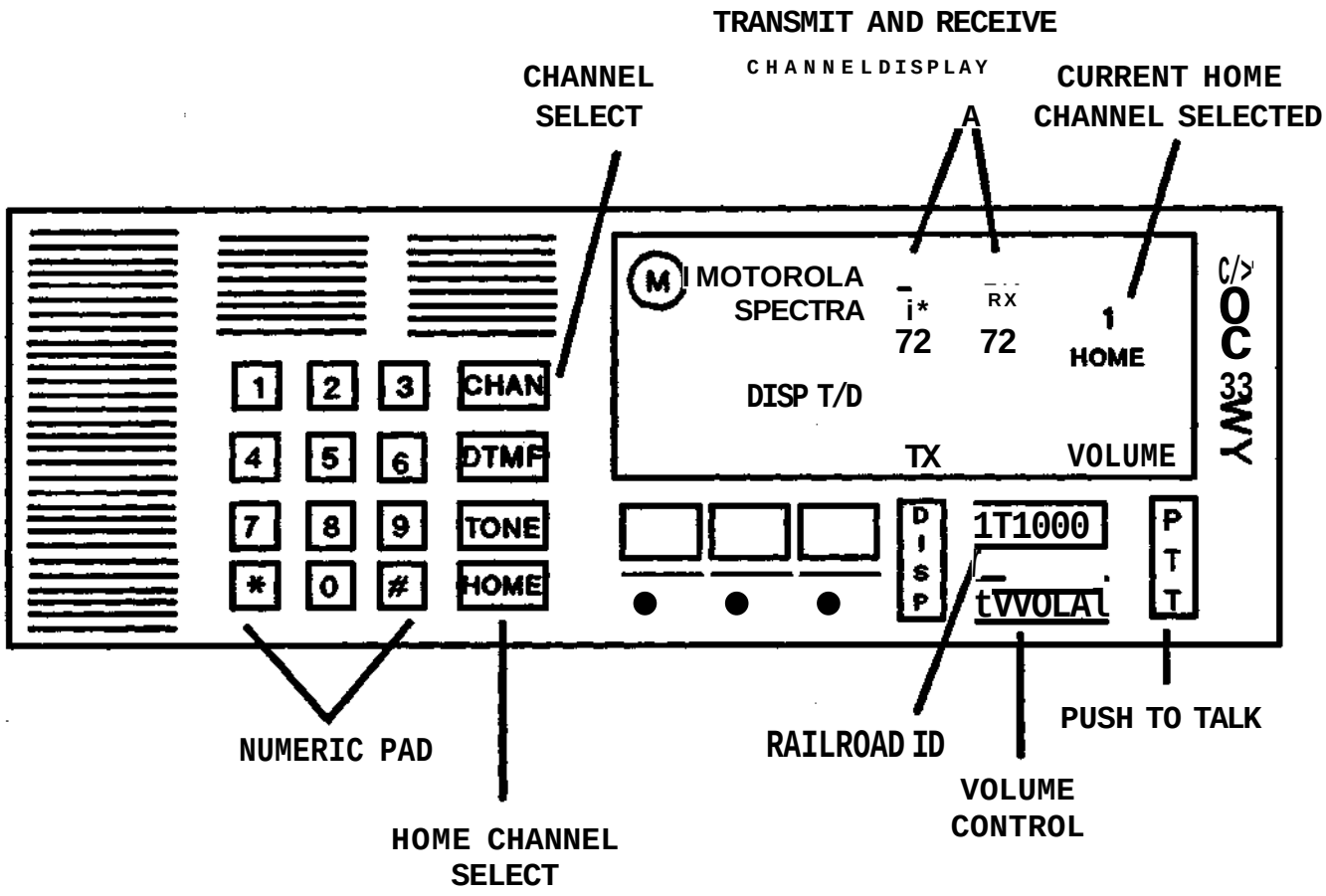


ENGRAVE
SOU. RWY.
OR
N&W RWY.

NEW RADIO BULLETIN

Norfolk Southern locomotives are being equipped with Motorola Spectra radios. These are all channel radios capable of transmitting (TX) and receiving (RX) any of 97 railroad frequencies. Each frequency has been assigned a number which will be displayed in the display window when properly selected.

Transmitting on unauthorized channels is a violation of FCC regulations and Federal law.



The following table shows the transmit (TX) and receive (RX) channels to be used by road trains of any railroad operating on NS tracks in accordance with NS rules, timetables, and instructions. These channels are also programmed into this radio as HOME CHANNELS and can be selected by calling up the home program channel or by simply selecting the channel by the TX and RX numbers. HOME CHANNELS 7, 8 and 9 will display the Norfolk Southern railroad ID number assigned to the unit.

HOME PROGRAM CHANNEL DESIGNATION	OLD CHANNEL NAME	AAR CHANNEL TRANSMIT TX CHANNEL	AAR CHANNEL RECEIVE RX CHANNEL
1	N&W EAST	72	72
2	N&W LAKE	76	76
3	N&W WEST	22	22
4	SOUTHERN ROAD 1	56	56
5	SOUTHERN ROAD 2	48	09
6	SOUTHERN TERMINAL	92	92
7,8,9	RAILROAD ID (T????)	01	01

HOME CHANNEL EXAMPLE

To select a HOME channel, simply press the HOME key and then the corresponding number on the numeric key pad.

press HOME + l This gives you the N&W east channel; (72 72) will be displayed in the channel display.

To speak on this channel, simply press the PTT button.

To transmit a tone for calling the dispatcher, simply press the appropriate number on the numeric pad.

SELECT ANY CHANNEL EXAMPLE

To select a any channel, simply press the CHAN key and then the corresponding number on the numeric key pad.

press CHAN + 7 2 + 7 2 This gives you the N&W east channel; (72 72) will be displayed in the channel display.

To speak on this channel, simply press the PTT button.

To transmit a tone for calling the dispatcher, simply press the appropriate number on the numeric pad.

Subject: AAR List of Railroad Addresses for Radio Return

Atlanta - December 12. 1990

188-027

Radio Shop Supervisors:

T. Bible	**(CHGA)**	**M. E. Liles**	**(KNOX)**
J. J. Brighi	**(RALE)**	**E. N. Lowe**	**(NORF)**
M. W. Croshaw	**(CHAR.** SPNC)	**D. M. Mallott**	(BELE)
H. B. Davis	**(BMHM)**	**S. L. Martin**	(ROKE)
R. A. Gallop	**(KACI.** MOBR. STLO)	**J. K.** Murphy	(JACK.MACN)
P. B. Gibson	**(FTWF.** CHGO)	**T. L.** Nesbit	(COLA)
H. P. Guess	**(SAVH)**	**J. D.** Roberts	(DETR)
J. A. Hall	**(ANDV)**	**W. J.** Schlake	**(CINC)**
P. M. Hare	**(NORL)**	**L. R.** Showalter	(LYBG)
R. B. Harris	**(ASHV)**	**H. H.** Stanley	(SHEF)
R. M. Hoffman	**(LSVL)**	**R. S. Ward**	(DECA)
6. E. Johnson	**(CLEV. CONN)**	**F. D.** Watkins	(BLFD, WMSN)
G. B. Kendrick	**(PORT)**	**C. A.** Wilson	(ATLG)
R. K. Lebon	**(MNSE)**		

When foreign railroad radios show up on our property they should be **promptly shipped to the owning railroad. Mechanical** personell have **been instructed to deliver all foreign radios to the** nearest radio **shop for proper handling.**

Attached are two lists of railroads with ship to addresses. One list is for EOTD units (INFORMATION **FOR END OF** TRAIN UNITS) and the **second is for all other type of radios (INFORMATION** FOR RADIOS).

J. F. Norris

Copies: Mr. D. E. Barker
Mr. A. F. Cox
Mr. D. L. Scott
Mr. E. L. Sweeney
All Gen. Supervisors
Mr. C. M. Johnson III

November, 1990

INFORMATION FOR END OF TRAIN UNITS

ID TAG or STENCILING	SHIPPING ADDRESS
ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY	
Property of AT&SF Rwy. Co. or Santa Fe Railway	Mr. Tom Atkins A.T. & S.F. Rwy. Co. Communications Building 4515 Kansas Avenue Kansas City, KS 66109 Phone: (913) 551-4615
BANGOR & AROOSTOOK RAILROAD	
BAR	Bangor & Aroostook Railroad RR 2 - Box 45 Bangor, ME 04401 Phone: (207) 848-5721
BURLINGTON NORTHERN RAILROAD	
BN-xxxx (Pulse E.O.T.)	Burlington Northern Railroad Comms. Department, Radio Shop 105 N.E. - 31st Avenue Minneapolis, MN 55418 Phone: (612) 298-2766
CHICAGO & NORTH WESTERN TRANSPORTATION COMPANY	
CNW-4 or 5 digits	Chicago & North Western Trans. Co. Proviso-Diesel Shop 5050 W. Lake Street Melrose Park, IL 60160 Phone: (708) 547-4294
CONSOLIDATED RAIL CORPORATION	
CR xxxxxx	Consolidated Rail Corporation Radio Maintainer Selkirk Yard Selkirk, NY 12158 Phone: (518) 767-6560 Consolidated-Rail Corporation Radio Maintainer 218 Enola Road Enola, PA 17025 Phone: (717) 732-7442

INFORMATION FOR END OF TRAIN UNITS

ID TAG or STENCILING	SHIPPING ADDRESS
Conrail Continued	
	Consolidated Rail Corporation Radio Maintainer Conway Yard - Rt. 65 Conway, PA 15027 Phone: (412) 857-6221
	Consolidated Rail Corporation Radio Maintainer Elkhart Yard Lusher Ave. & Nappanee Street Elkhart, IN 46515 Phone: (210) 296-2343
CENTRAL VERMONT RAILWAY	
C. V. RY. St. Albans, VT	Central Vermont Railway Lower Hoyt Street St. Albans, VT 05478 Phone: (802) 527-7595
CSX TRANSPORTATION, INC.	
CSX XXXXXX	T. H. Hallmark Supervisor, Communications CSX Transportation 2840 Seaboard Road Tarrant, AL 35217 Phone: (205) 849-2427
DULUTH, MISSABE & IRON RANGE RAILWAY	
DM & IR or MISSABE	Duluth, Missabe & Iron Range Rwy. Communications Department 329 Second Street Proctor, MN 55810 Phone: (218) 628-4144
DENVER & RIO GRANDE WESTERN RAILROAD	
D i R G H R R	L. D. Busboom Supervisor, Communications Denver & Rio Grande Western RR 5090 Kalamath Street Denver, CO 80221 Phone: (303) 595-2244

INFORMATION FOR END OF TRAIN UNITS

ID TAG or STENCILING	SHIPPING ADDRESS
GRAND TRUNK WESTERN RAILROAD	
GTW	Grand Trunk Western Railroad Communications Department 409 West Jameson Street Battle Creek, MI 49017 Phone: (616) 966-5105
INDIANA HARBOR BELT RAILROAD	
IHB 803XX	Indiana Harbor Belt Railroad Radio Shop 2721 - 161st Street Hammond, IN 46325 Phone: (219) 989-4942
KANSAS CITY SOUTHERN RAILROAD	
KCS	Kansas City Southern Railroad Hech. Dept. - Car Dept. 4601 Blanchard Road Shreveport, LA 71107 Phone: (318) 227-7101
NORFOLK SOUTHERN CORPORATION	
Dxxxx or Xxxxx (Southern Technologies)	Norfolk Southern Corporation Supervisor Communications Shaffers Crossing Radio Shop Roanoke, VA 24042 Phone: (703) 981-4189 Norfolk Southern Corporation Supervisor Communications 1735 Condit Street Decatur, IL 62521 Phone: (217) 425-2114 Norfolk Southern Corporation Supervisor Coxuaunications Locomotive Shop 24424 North Praire Road Bellevue, OH- 44811 Phone: (419) 483-1843 Norfolk Southern Corporation Supervisor Communications 34 Scruggs Street Chattanooga, TN 37408 Phone: (615) 697-1015

INFORMATION FOR END OF TRAIN UNITS

ID TAG or STENCILING	SHIPPING ADDRESS
PADUCAH & LOUISVILLE RAILWAY	
P&L **OXX**	Paducah & Louisville Rwy Radio **Shop** 1500 Kentucky **Avenue** Paducah, KY **42001** **Phone: (502) 444-4331**
PROVIDENCE & WORCESTER RAILROAD COMPANY	
P & W RR **(DSL)**	Providence & Worcerter RR Co. 382 Southbridge Street Worcester, MA 01601 Phone: **(508) 799-4472**
SOO LINE RAILROAD	
SOO LINE XXXX	**SOO Line Railroad** **Radio** Shop 415 East Green Street Bensenville, IL **20106** **Phone: (312) 860-4443**
SOUTHERN PACIFIC TRANSPORTATION COMPANY	
SPT CO. ECxxxx, EDxxxx, EPxxxx, ESxxxx, ETxxxx, HCxxxx, HPxxxx, or HTxxxx	**St. Louis** Southwestern Railway Co, **c/o Radio Shop (GDR)** **1400** E. 2nd Street Pine Bluff, AR 71601 **Phone: (501) 541-1642**
UNION PACIFIC RAILROAD	
UPRR (Some) (To verify contact: Mr. O. T. Wells Phone: (402) 271-5604)	**Union Pacific** Railroad **Comms. Dept.** - Radio Shop **4601 West Street** **North** Platte, **NE** 69101 **Phone:** (308) 535-2565
WISCONSIN CENTRAL LIMITED	
WCET xxxx	**Wisconsin Central** Limited **1625** Depot Street **P.O. Box 348** **Stevens Point, WI 54481**

November, 1990

INFORMATION FOR RADIOS

ID TAG or STENCILING	SHIPPING ADDRESS
AMTRAK	
AMTRAK & LOGO	Amtrak Radio Shop 30th Street Station Lower Level Philadelphia, PA 19104 Phone: (215) 895-7658
ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY	
ATSF-XXXXXX	Mr. Robert W. Ennis The A.T. & S.F. Railway Co. Communications Repair Shop 1170 W. 3rd Street San Bernardino, CA 92410 Phone: (714) 387-1458 Mr. Al I. Moen The A.T. & S.F. Railway Co. Communications Repair Shop 5800 N. Main Street Fort Worth, TX 76179 Phone: **(817)** 232-7845 **Mr. Leo** E. **Sullivan** The **A.T.** & S.F. Railway Co. Communications Repair Shop Mechl. Training Building 26th & Argentine Streets Kansas City, KS 66106 Phone: **(913) 551-4442**
BANGOR & AROOSTOOK RAILROAD	
BAR	**Bangor & Aroostook Railroad** RR 2, Box **45** Bangor, ME **04401** **Phone: (207) 848-5721**
BURLINGTON NORTHERN RAILROAD	
BNA-xxxx	**Burlington** Northern Railroad Comms. **Dept.** > Radio Shop **105 N. E. 31st** Avenue **Minneapolis, MN** 55418 **Pnone: (612)** 298-2766

INFORMATION FOR RADIOS

ID TAG or STENCILING	SHIPPING ADDRESS
THE BELT RAILWAY COMPANY OF CHICAGO	
BRC or Belt Railway	**The Belt** Railway **Co.** of Chicago Communications Department **6900 S.** Central **Street** **Bedford Park, IL** 60638 **Phone:** (708) **496-4051**
CHICAGO & NORTH WESTERN TRANSPORTATION COMPANY	
CNW ME-XXX	**Chicago & North** Western Trans. Co. Comms. Department & Radio Shop 301 W. Lake Street Northlake, **IL 60164** **Phone: (312)** 559-6107
CONSOLIDATED RAIL CORPORATION	
CR XXXXXX **(Last 6 Digits of Serial #)**	Consolidated Rail Corporation Radio Maintainer **Selkirk Yard** **Selkirk, NY 12158** **Phone: (518) 767-6560** **Consolidated Rail Corporation** **Radio Maintainer** **218 Enola Road** **Enola, PA 17025** **Phone: (717) 732-7442** **Colsolidated Rail Corporation** **Radio** Maintainer **Conway Yard - Rt. 65** **Conway, PA 15027** **Phone: (412) 857-6221** Consolidated Rail Corporation Radio Maintainer **Elkhart Yard** **Lusher Ave. & Nappanee Street** **Elkhart, IN 46515** **Phone: (219} 296-2343**

INFORMATION FOR RADIOS

ID TAG or STENCILING	SHIPPING ADDRESS
CENTRAL VERMONT RAILWAY	
C. V. RY. St. Albans, VT	Central Vermont Railway Lower Hoyt Street St. Albans, VT 05478 Phone: (802) 527-7595
CSX TRANSPORTATION, INC.	
CSX xxxxxx	B. C. Goad Supervisor, Communications CSX Transportation, Inc. 800 S. 10th Street Louisville, KY 40203 Phone: (502) 364-1142
DENVER & RIO GRANDE WESTERN RAILROAD	
RIO GRANDE RAILROAD	L. D. Busboom Supervisor, Communications Denver & Rio Grande Western RR 5090 Kalamath Street Denver, CO 80221 Phone: (303) **595-2244**
DELAWARE OTSEGO CORPORATION	
NYSW **XXXX**	Jerry Lesher NYS&W **Railway** Corporation Little Ferry Diesel Terminal 47 Bergen Turnpike Ridgefield Park, NJ 07660
DULUTH, MISSABE & IRON RANGE RAILWAY	
DM 6 IR **or** **MISSABE**	Duluth, Missabe & Iron Range Rwy. Communications Department 329 Second Street Proctor, MN 55810 Phone: (218) 628-4144
GRAND TRUNK WESTERN RAILROAD	
GRAND **TRUNK** **or** GT **XXXX**	Grand Trunk Western Railroad Communications Department **409** West Jameson Street Battle Creek, **MI** 49017 **Phone: (616)** 966-5105

INFORMATION FOR RADIOS

ID TAG or STENCILING	SHIPPING ADDRESS
INDIANA HARBOR BELT RAILROAD	
HS-101, 102 & 103 TS - 201 through 264	Indiana Harbor Belt Railroad Radio Shop 2721 - 161st Street Hammond, IN 46325 Phone: (219) 989-4942
KANSAS CITY SOUTHERN RAILROAD	
XCS RWY	Kansas City Southern Railroad Radio Shop - General Office Bldg. 4601 Blanchard Road Shreveport, LA 71109 Phone: (318) 227-7188
LONG ISLAND RAILROAD	
LONG ISLAND RAILROAD	R. Ingargidla Foreman Long Island Railroad Babylon Radio Shop 70 Foxglove Road West Islip, NY 11795 Phone: (718) 990-7660
NORFOLK SOUTHERN CORPORATION	
Mxxxx, MCSxxxxx, MLAxxxxx, MLBxxxxx, MLCxxxxx, MLDxxxxx, MLKxxxxx, MLSxxxxx, MLXxxxxx, MLYxxxxx, MLZxxxxx, LLxxxxxx, and Txxxx	Norfolk Southern Corporation Supervisor Communications Shaffers Crossing Radio Shop Roanoke, VA 24042 Phone: (703) 981-4189 Norfolk Southern Corporation Supervisor Communications 1735 Condit Street Decatur, IL 62521 Phone: (217) 425-2114 Norfolk Southern Corporation Supervisor Communications Locomotive Shop 24424 North Praire Road Bellevue, OH 44811 Phone: (419) 483-1843 Norfolk Southern Corporation Supervisor Communications De Butts Yard Radio Shop 34 Scruggs Street Chattanooga, TN 37408 Phone: (615) 697-1015

INFORMATION FOR RADIOS

ID TAG or STENCILING	SHIPPING ADDRESS
PADUCAH & LOUISVILLE RAILWAY	
P&L (green paint) **PLT xxx** **PLR xxx**	**Paducah & Louisville Rwy** **Radio Shop** **1500 Kentucky Avenue** **Paducah, KY 42001** **Phone: (502) 444-4331**
PROVIDENCE & WORCESTER RAILROAD COMPANY	
PW RR xx	**Providence & Worcester Railroad Co.** **382 Southbridge Street** **Worcester, MA 01601** **Phone: (508) 799-4472**
SOO LINE RAILROAD	
SOO LINE XXXX	**SOO Line Railroad** **Radio Shop** **415 East Green Street** **Bensenville, IL 20106** **Phone: (213) 860-4443**
SOUTHERN PACIFIC TRANSPORTATION COMPANY	
SPT **CO. Axxxx, ACxxxx, ALxxxx, ASxxxx, ANxxxx or ARxxxx**	**Southern Pacific Transportation Co.** **c/o Radio Shop (VMS)** **1900 - 7th Street** **Oakland, CA 94607** **Phone: (415) 891-7687**
UNION PACIFIC RAILRAOD	
UPRR RVxxxxx **UPRR RAxxxxx** **UPRR RBxxxxx**	**Union Pacific Railroad** **Communications Shop** **3300 - 14th Avenue** **Council Bluffs, IA 51501** **Phone: (402) 271-3605**
WISCONSIN CENTRAL LIMITED	
WCL xxxx	**Wisconsin Central Limited** **1625 Depot Street** **P. 0. Box 348** **Stevens Point, WI 54481**

SERVICE AND REPAIR NOTES

bulletin

MOTOROLA
COMMUNICATIONS AND tltCTSONICS, INC.
A SUBSIDIARY OF MOTOROLA, INC.

TECHNICAL INFORMATION CENTER • 8000 W. SUNRISE BLVD. • FT. LAUDERDALE, FL 33322 • (305)475-6170

SRN - 1087
APC- 749,751
January 21,1991

Memo To: SRN Mailing list

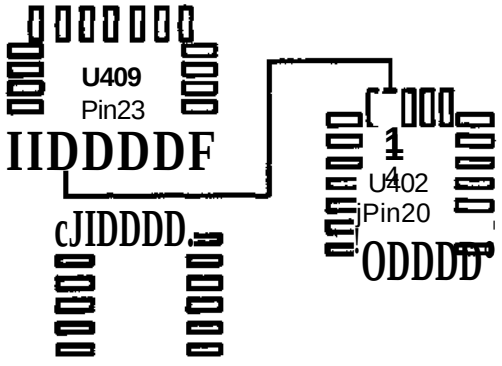
From: Jerry Davis

Subject: Changing EEPROMS on 99 Channel MT1000

All MT1000 99 channel display radios **that shipped after 1/1/91** uses a NTN4893C **controller module that utilizes a modified memory device which requires an additional ground connection. The reason for the additional ground** connection is related **to the method** of manufacture in which Pin-20 is utilized for test purposes **This pin normally does not require a ground** connection. To ensure proper **operation a redundent ground is being added.**

Radios shipped before 1/1/91 do not have the grounding jumper and do not need it **as received from the** factory; however, if the the EEPROM (0105950R56) must be **replaced for radios shipped before 1/1/91,** the grounding jumper must be added. **Proper placement of the grounding jumper is from Pin-20 pi U402 til Pin-23 ©I U409.**

Future builds of the 16 channel models of MT1000 will also carry the grounding **jumper as a precaution even though it is not** needed for proper operation. **NTN4893A and NTN4893B** controller flexes use 3 **EEPROMS** (0105956M99) which **do not need this jumper.**



The above diagram gives preferred jumper placement

Jerry Davis
Product Services,
Plantation

If applicable, enter this information or note this bulletin number and subject material in the appropriate equipment instruction manuals **and make neceaury schematic diagram changes.**

Enter this bulletin in the correct MASTER and CLASSIFIED INDICES for future reference.

SECTION VI - BULLETINS

BULLETIN NUMBER 91-001

EFFECTIVE MARCH 29, 1991

Log Books and form 683 have been used to keep records of railroad base station radio maintenance, installation and assignment. From this day forth, the only record needed for railroad base station maintenance and installation is the Radio Information System (RIS). This ruling does not include Maritime base stations.

In the past, the FCC required written records of all maintenance and installation to base station radios via log book. Since Norfolk Southern has gone to Atlanta's mainframe computer system to record the radio information in RIS, these log books are no longer needed.

Since RIS will be the only authorized method of radio record keeping, this emphasizes the need for all authorized personnel to update RIS on a regular basis. All 683 forms should be detached from any radio and discarded. Log books at base station sites are not necessary.

Maritime base station radios will still be required to use a locr book.

J. R. Strickland

Subject: Radio Input into RIS System.

Atlanta, 6A - Oct. 3, 1991
19-028

Radio Shop Supervisors:

It has been brought to my attention that radios are not being updated in RIS. Several radios have been received with receive dates, serial numbers and other necessary information not entered.

When a new radio is received in a shop, the 'CC' screen roust be filled out entirely with correct information pertaining to each radio. The only information which may be ignored by the shop is the accounting information at the bottom of the screen. If any information is incorrect and cannot be corrected by shop personnel, call this office for handling.

Refer to the Radio Instructions Manual (Section II) for proper instructions on updating RIS. The purpose of RIS is to provide current information for all radios owned by Norfolk Southern. This cannot be accomplished unless everyone does his part.

Periodically, lists are run to see if radios are being updated properly in RIS. Such a list is attached, it indicates the shops that have not been correctly updating RIS. See that information for these radios is properly entered.

O. F. Norris

Copy: E. L. Sweeney
D. L. Scott«""
General Supervisors
6. C. Mullen III

RADIO_ID	PO_DATE	SERIAL	REC_DATE	LOCATION
C4732	910327	617ARQ0588		ATLG
C4761	910425	617ARQ0582		ATLG
C4767	910531			ATLG
C4768	910531	617ARN1102		ATLG
C4769	910531	624ARN1275		ATLG
N1629	900612			ATLG
N1630	900612			ATLG
N1646	900608			ATLG
N1647	900608			ATLG
C5265	900817			BELE
N1649	900608			BELE
R6078	900522			BELE
R6079	900522			BELE
T9740	910320			BELE
H1200	900214		900301	BLFD
N2109	910128			BLFD
N2269	910313			BLFD
C4566	900323	864PQJ1039		BMHM
N1276	900126			BMHM
N1336	900305	651AQE4447		BMHM
N1433	900424			BMHM
434	900424			BMHM
W241	910314	751ARG0726	910410	BMHM
C4519	900323	864PQJ2148		CHGA
C4520	900323	864PQJ2149		CHGA
N2107	910128			CHGA
N2108	910128			CHGA
T9453	900823			CHGA
T9672	901106			CHGA
C5255	900814			CINC
C5254	900814			COLA
R6107	910322			COLA
R6108	910322			COLA

RADIO_ID	PO_DATE	SERIAL	REC_DATE	LOCATION
O«20	900220			FTWF
C4512	900328	864PQJ2072		FTWF
C4513	900328	864PQJ2072		FTWF
C4514	900328	864PQJ2074		FTWF
C4515	900328	864PQJ2075		FTWF
C4516	900328	864PQJ2035		FTWF
C4517	900328	864PQJ2036		FTWF
C5261	900927			FTWF
C5262	900927			FTWF
C5273	910517			FTWF
C5274	910517			FTWF
N1392	900425	751AQJ1251		FTWF
N1393	900425	751AQJ1252		FTWF
N1394	900425	751AQJ1253		FTWF
N1395	900425	751AQJ1254		FTWF
N1512	900426	751AQL1943		FTWF
N1547	900427	751AQL1950		FTWF
N1548	900427	751AQL1951		FTWF
N1643	900608	651AQL3920		FTWF
N1644	900608	651AQL3921		FTWF
N1645	900608	651AQL3922		FTWF
N2115	910325	751AR62433		FTWF
N2116	910325	751AR62434		FTWF
N2117	910325	751AR62435		FTWF
N2118	910325	751ARG2436		FTWF
; 1X9	910325	751AR62437		FTWF
W120	910325	751AR62438		FTWF
R6088	900727			FTWF
R6089	900727			FTWF
R6090	900727			FTWF
R6091	900727			FTWF
R6092	900727			FTWF
R6093	900727			FTWF
R6094	900730			FTWF
R6095	900730			FTWF
R6096	900730			FTWF
R6097	900730			FTWF
R6098	900730			FTWF
R6099	900?30			FTWF
R6100	900823			FTWF
R6101	900823			FTWF
R6102	900730			FTWF
R6103	900730			FTWF
R6104	910517			FTWF
R6105	910517			FTWF
R6106	910517			
C5260	900814			JACK

RADIO_ID	POJDATE	SERIAL	REC_DATE	LOCATION
C4548	900327	864PQJ2060		KNOX
C4549	900327	864PQJ2061		KNOX
C4550	900323	864PQJ2136		KNOX
C4551	900323	864PQJ2137		KNOX
C4552	900323	864PQJ2138		KNOX
H1772	910128			KNOX
R6109	910531			KNOX
R6110	910531			KNOX
C4529	900323	864PQJ2152		LSVL
C4530	900327			LSVL
C4531	900323			LSVL
C4532	900323			LSVL
C4647	900517			HACN
C4648	900517			MACN
C4650	900517			MACN
C4667	900613			MACN
˙256	900814			MACN
'^*»259	900814			MACN
H1781	910315	651ARG0586		MACN
H1782	910315	651ARG0587		MACN
M1964	900920	751AQU1911		MACN
N2358	910315	751ARG0790		MACN
N2359	910315	751ARG0791		MACN
N2360	910315	751ARG0792		MACN
N2361	910315	751ARG0793		MACN
N2362	910315	751ARG0794		MACN
N2363	910315	751ARG0795		MACN
N2364	910315	751ARG0796		MACN
N2365	910315	751ARG0797		MACN
N2366	910315	751ARG0798		MACN
N2367	910315	751ARG0799		MACN
N2368	910315	751ARG0803		MACN
N2369	910315	751ARG0801		MACN
N2370	910315	751ARG0802		MACN
82371	910315	751ARG0800		MACN
S0362	900523		900101	MACN
N1515	900426	751AQL1791		MOBR
N1516	900426			MOBR
N1517	900426			MOBR
N1518	900426			MOBR

RADIO_ID	PO_DATE	SERIAL	RECJDATE	LOCATION
K_438	900426			NORF
N1439	900426			NORF
N1618	900523		900702	NORF
N1665	900607			NORF
N1666	900607			NORF
N1667	900607			NORF
N1668	900607			NORF
C5253	900814			NORL
C4509	900328			PORT
C4510	900328			PORT
C4511	900328			PORT
€4730	901107			ROKE
C4733	910308			ROKE
C4734	910308			ROKE
C4735	910308			ROKE
€4736	910308			ROKE
C4737	910308			ROKE
C4738	910308			ROKE
C4739	910308			ROKE
i 740	910308			ROKE
W741	910220			ROKE
€4765	910502			ROKE
€4766	910502			ROKE
N1338	900305		900508	ROKE
N1339	900305		900508	ROKE
N1361	900302		900508	ROKE
N1362	900302		900508	ROKE
N1363	900302		900508	ROKE
€5257	900814			SHEF
C5258	900814			SHEF
N1958	900823			SHEF
N2095	910128	751ARC1452		SHEF
C4436	900305			SPNC
C4626	900503			SPNC
C4742	910220			SPNC
€4750	910501			SPNC
€4751	910501			SPNC
€4752	910501			SPNC
C4753	910501			SPNC

Subject: Radio Replaceaent

Atlanta, GA - Oct. 8, 1991
19-028

Radio Shop Supervisors:

When a radio is being replaced by a new radio, the replaced radio **mist be in hand at a radio shop** before the new radio can be given **out. All radios which are to be retired and replaced by a** new radio roust be in a **radio shop** before the new radio can be issued to anyone. The **replaced** radios will be destroyed or used for spare **parts and not released unless other instructions** from this office are **given.**

Destroyed or stolen radios which are being replaced can **be distributed whenever the new radio is** received.

The Senior Comunications Engineer's office will be notified of **any radios which have** been turned into a shop via the attached form. Please **fill out all** known information on the form and return to the **address shown.**

Enter the new radio information into RIS. Refer **to** the Radio **Instructions Manual (Section II) for proper instructions** on updating **RIS.** The purpose **of RIS** is to **provide current** information for all **radios** owned by **Norfolk** Southern. **This** cannot be accomplished unless **everyone does his part.**

J. F. Norris

Copy: E. L. Sweeney
D. L. ScotV
General Supervisors
6. C. Mullen III

RETIRED RADIOS

SHOP : _____ **DATE :** _____

The following list of radios have been received by this radio shop **and will be destroyed or used for spare** parts. These radios will not be **put back into service unless notified by the** Senior Communications **Engineer's office in Atlanta, 6A.**

REPLACED RADIO ID	**NEW RADIO** ID	AFE OR COST CENTER OF NEW RADIO	P. O. NUMBER OF NEW RADIO

_____

Conaunications Supervisor

RETURN **TO:** SENIOR COMMUNICATIONS **ENGINEER**
99 SPRING ST. BOX 123
ATLANTA, GA 30303

RETIRED **RADIOS**

SHOP : _____ **DATE :** _____

The following **list of** radios have been received by this radio shop and will be destroyed or used for spare parts. These radios will not be put back **into** service unless notified by the Senior Communications **Engineer's office in Atlanta, 6A.**

REPLACED RADIO ID	**NEW** RADIO ID	*AFE OR COST CENTER OF NEW RADIO	P. O. NUMBER OF NEW RADIO

_____

Communications Supervisor

RETURH **TO:** SENIOR COMMUNICATIONS ENGINEER
99 SPRING ST. BOX 123
ATLANTA, 6A 30303

Subject: Radio Safety Bulletin

Atlanta - November 19. 1991
308
309

GENERAL SUPERVISORS. COMMUNICATIONS:
SUPERVISORS. COMMUNICATIONS:
ASSISTANT SUPERVISOR. COMMUNICATIONS:

Recently, the Mechanical Department experienced a Lost Time Injury when the handle of a clean cab locomotive radio broke. The employee reported that the handle on both sides of the radio were loose and when he attempted to lift the radio, the handle snapped off. Attached is a Safety Bulletin which should be posted at all radio shops. Make sure that your people are aware that all radios leaving the radio shops should be checked to ascertain that the carrying handles are properly secured.

When performing your Safety Audits, you should check some Mechanical facilities where radios are kept and make sure that any radios they have with loose handles are turned in to the radio shop by the Mechanical Department for necessary repairs.

^ ^
A. F. Norris

cc: Mr. F. L. Brown:
Mr. E. P. Prevette:

If you find radios with loose handles, make sure they are sent to the radio shop for repairs.

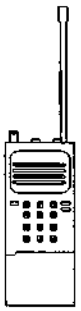
J. F. Norris

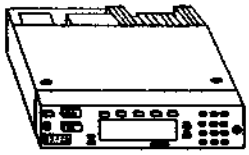
cc: Mr^-J. R. Strickland
(Kr. D. L. Scott
Mr. E. L. Sweeney

RADIO SAFETY BULLETIN

WS

COMMUNICATIONS





Subject: Radio Handles

TO ALL RADIO SHOP PERSONNEL:

A recent injury occured when the handle broke off a clean cab (Motorola MCX100RR) locomotive radio. **The employee reported that the** handles on both sides **of the radio were loose. When the** employee attempted **to lift the radio, the handle snapped off.**

All radios should be checked prior to leaving a **radio shop for any loose or broken parts which** could fall **off** and cause injury **to** the individual carrying **the radio.**

No radio should leave our shops or stay in service **which is a possible safety hazard!**

J. F. Norris

Subject: Motorola Bulletins for MCX-1000 Radios

Atlanta - February 3. 1992
19-026

Messrs.
J. J. Brighi (RALE)
M. W. Croshaw (CHAR. SPNC)
F. C. Damron (PORT)
R. A. Gallop (KAXI, MOBR. STLO)
P. B. Gibson (FTWF. CHGO)
H. P. Guess (JACK. MACN)
P. M. Hare (NORL)
R. B. Harris (SAVH)
W. R. Hatche11 (ASHV)
D. L. Hicks (KNOX)
S. P. Huff (LSVL)
C. M. Johnson (NSYD)
G. E. Johnson (CLEV, CONN)
E. N. Lowe (NORF)
D. M. Malott (BELE)
S. L. Martin (ROKE)
R. D. Mitchell (ANDV)
J. K. Murphy (CHGA)
T. L. Nesbit (COLA)
J. D. Roberts (MNSE. DETR)
W. J. Schlake (CINC)
L. R. Showalter (LYBG)
H. H. Stanley (SHEF)
R. S. Ward (DECA)
F. D. Watkins (BLFD. WMSN)
C. A. Wilson (INMN)

Attached is Motorola Bulletin Number 1440 for the MCX-100RR mobile/railroad radio. As these radios come through your shop, the Modification noted on Bulletin 1440 should be done.

Recently, we found Radio T-8936. which was serviced at one of our radio shops in December 1991 and released for service without being modified as per my instructions issued in October 1990. Hake sure that <u>all</u> MCX-lOORR's are modified <u>before</u> they leave your shop.

J. F. Norris

cc: Mr. D. L. Scott
Mr. E. L. Sweeney
Mr. G. C. Mullen
Mr. D. L. Keith
Mr. R. F. Fults

MOTOROLAUMITED PRODUCTSERVICES **BULLET!!***	CPSB# 1440 PHO0. « 700 ISSUE DATE March/89 DEADLINE DATE N/A PAGE 1 OFi

SUBJBCTt MOC100 RR OCCASIONAL RESET

If a customer experiences an occasional reset condition (display shows all 8's or all O's) during either PIT key-up or key-down, the following modification can be donex

1. Remove front panel from Clean Cab Radio.

2. Remove dust cover and screws to access the micro-board.

3. On the micro-board (VLN4404A series)
   - Remove zener diode VR1
   - Replace with^a 2.7 volt zener diode P/N 48-82256C33

4. Reassemble front panel and radio.

This bulletin is a service aid only - no warranty is implied.

Released By:

Approved By: 27/2/89

1174

Subject: Manuals for Radio Shops.

Atlanta, GA - April 23, 1992
19-000

General Supervisors Communications
Supervisors Communications:

Several radios shops have complained about not having up-to-date manuals for new radios. Motorola in the past sent one manual for each radio purchased. This policy is no longer followed. Each new radio is accompanied with a card that entitles the recipient to a manual if the card is sent in within the specified date shown on the card.

All radios are sent to only a few of the shops due to the fact that these shops are equipped with engravers. This makes it difficult for outlying shops to get a new manuals when needed.

Effective Immediately any shop receiving cards which are not needed should send the excess cards to the Senior Communications Engineers office in Atlanta. If an outlying shop needs a manual they should contact the Senior Communications Engineers office or one of the larger shops for such a card to receive the proper updated manual.

Jr. P. Morris

Cy; D. L. Scott
E. L. Sweeney
6. C. Mullen III

____Received from NSC.ELSWEENE 404/529-1003 04-28-92 16.30
-> RADIOSHOPS RADIO SHOP SUPVRS
CCt
-> ALLGENERALS ALL GENERALS EAST & WEST
All,
Note below an excellent money saving idea that all radio shops should should start using immediately. Any questions should be referred to Steve Martin in Roanoke - 981-5269.

ELS 4-28-92

ED, AT OUR RADIO SHOP AT ROANOKE WE FREQUENTLY HAVE TO REPLACE THE EXTERNAL MIC CONNECTOR LOCATED ON THE REAR OF THE MCX100 LOCO RADIO. DUE TO POOR DESIGN BY MOTOROLA THIS CONNECTOR IS VERY EASILY DAMAGED. MOTOROLA MAKES THIS CONNECTOR AS AN ASSEMBLY OF MOUNTING BRACKET, CABLE, AN CONNECTOR AT A COST OF 87.98 EA. THE CONNECTOR (not the assembly) IS MADE BY AMPHENOL AND IS AVAILABLE FROM NEWARK ELECTRONICS AT A COST OF 10.40 EA. (A SAVINGS OF 77.58 EA.) TIME TO INSTALLED THIS PART IS ABOUT THE SAME AS REPLACING THE COMPLETE ASSEMBLY. IF OTHER SHOPS PLAN TO USE THIS INFORMATION THEY NEED TO KEEP ALL OTHER HARDWARE IN THE ASSEMBLY TO BE REUSED. THE MOTOROLA P/N IS VLN-4475A , class/item 610-035968. The AMPHENOL P/N FOR REPLACEMENT IS MS3101A-14S-6S.

I CHECKED WITH MATERIAL MANAGEMENT TO FIND OUT OUR USAGE OF THIS PART FOR 1991 AS A SYSTEM TO BE 176 ORDERED THRU M/M SYSTEM (A COST OF 15,484.48 COMPARED TO 1,830.40).

S.L.MARTIN

-> NSC.JKMURPHY	JAMES K. MURPHY	COMM
-> NSC.JJBRIGHI	JEFFREY J BRIGHI	COMM
-> NSC.MWCROSHA	M. W. CROSHAW	COMM
-> NSC.CMJOHNSO	CARL M. JOHNSON	COMM
-> NSC.RAGALLOP	ROBERT A. GALLOP	COMM
-> NSC.PBGIBSON	P.B.GIBSON	COMM
-> NSC.HPGUESS	HAROLD P. GUESS	COMM
-> NSC.RDMITCHE	R.D.MITCHELL	COMM
-> NSC.PMHARE	PETER M HARE	COMM
-> NSC.RBHARRIS	RICHARDBHARRIS	COMM
-> NSC.WRHATCHE	W.R.HATCHELL	C&S
-> NSC.GEJOHNSO	GARY E.JOHNSON	COMM
-> NSC.FCDAMRON	F.C. DAMRON	COMM
-> NSC.DLHICKS	DENVER L. HICKS	COMM
-> NSC.ENLOWE	EDWARD N. LOWE	COMM
-> NSC.DMMALOTT	DENNIS M MALOTT	COMM
-> NSC.SLMARTIN	STEVEN L MARTIN	COMM
-> NSC.TLNESBIT	THOMAS L NESBIT	C&S
-> NSC.JDROBERT	J D ROBERTS	COMM
-> NSC.WJSCHLAK	W J SCHLAKE	COMM
-> NSC.LRSHOWAL	LOUIS R SHOWALTER	COMM
-> NSC.HHSTANLE -	HAROLD H STANLEY	COMM
-> NSC.RSWARD	R. S. WARD	COMM
-> NSC.FDWATKIN	FRED D. WATKINS	COMM
-> NSC.CAWILSON	CHARLES A WILSON	COMM
-> NSC.WMTALEND	TALEND, WILLIAM M.	C&S
-> NSC.ELSWEENE	E. L. SWEENEY	COMM
-> NSC.RBSMITH	RANDALL B SMITH	COMM
-> NSC.GSSMITH	G.STEPHEN SMITH	COMM
-> NSC.DMTIMMER	DAVID M TIMMERMAN	COMM

Subject: Motorola Bulletins for MCX-100 Radios

Atlanta - September 8. 1992
19-026

Messrs.
J. J. Brighi (RALE)
M. W. Croshaw (CHAR. SPNC)
F. C. Damron (PORT)
R. A. Gallop (KAXI. MOBR. STLO)
P. B. Gibson (FTWF. CHGO)
H. P. Guess (JACK. MACN)
P. M. Hare (NORL)
R. B. Harris (SAVH)
W. R. Hatchell (ASHV)
D. L. Hicks (KNOX)
S. P. Huff (LSVL)
C. M. Johnson (NSYD)
G. E. Johnson (CLEV. CONN)
E. N. Lowe (NORF)
D. M. Malott (BELE)
S. L. Martin (ROKE)
R. D. Mitchell (ANDV)
J. K. Murphy (CHGA)
T. L. Nesbit (COLA)
J. D. Roberts (MNSE. DETR)
W. J. Schlake (CINC)
L. R. Showalter (LYBG)
H. H. Stanley (SHEF)
R. S. Hard (DECA)
F. D. Hatkins (BLFD. WMSN)
C. A. Wilson (INMN)

Attached is Motorola Bulletin Number 1439 for the MCX-100RR mobile/railroad radio. As these radios come through your shop, the modification noted on Bulletin 1439 should be done.

A momentary power disruption to the radio will cause it to revert to Channel-1 without this modification. With the modification installed, the radio remains on the last used channel after a power disruption. Make sure that all MCX-lOORR's are modified before they leave your shop. .

J. F. Norris

cc: Mr. T. L. Scott
Mr. E. L. Sweeney
Mr. R. E. Fults
Mr. D. L. Keith

CC: TO GENERALS

_____Received from NSC.ELSWEENE 404/529-1003 03-11-93 11.11

-> RADIOSHOPS RADIO SHOP SUPVRS
CC:
-> ALLGENERALS ALL GENERALS EAST & WEST
-> NSC.JFNORRIS J.F. NORRIS COMM

All:
This is in reference to Motorola Bulletin 1439, Memory Retention for the MCX-100RR, described in Mr. Norris' letter of 9-8-92 in which he directed that these radios be modified as they come through our shops. Bill's proposal will save over $100 per modification. Will advise when chips are ready for you.
ELS 3-11-93

-> NSC.WMTALEND TALEND, WILLIAM M. COMM

Bill,
Lets proceed with this, let me know when you have chips ready to exchange with other radio shops. Ed 3-11-93
cc: Mr. Norris - as info

-> NSC.ELSWEENE E. L. SWEENEY COMM
-> NSC.DMTIMMER DAVID M TIMMERMAN COMM
-> NSC.SDVILE STEPHEN D VILE COMM

MR. SWEENEY:

THE MCX100 ENGINE RADIO REQUIRES A MODIFICATION TO THE PROGRAMMABLE MICROPROCESSOR UNIT U151-60006C08. THIS WILL ALLOW THE RADIO TO REMEMBER ITS CHANNEL SELECTION IN THE EVENT OF A LOSS OF POWER TO THE UNIT. THE BLUEFIELD RADIO SHOP HAS PURCHASED AN ADAPTER CARD FOR THE PROM PROGRAMMER THAT WILL ACCEPT THIS MPU. A MODIFICATION IS BEING MADE TO THE ADAPTER'S SOFTWARE THAT WILL CORRECT ITS READ FEATURE. WHEN THAT IS COMPLETE, WE WILL BE READY TO MODIFY CHIPS FOR ALL RADIO SHOPS.

WE WOULD LIKE TO BUY ABOUT 20 BLANK MPU'S AND PROGRAM THEM WITH MOTOROLA'S MODIFIED SOFTWARE. THEN WE CAN SHIP THEM TO ONE RADIO SHOP AT A TIME IN EXCHANGE FOR THEIR OLD MPU'S WHICH WE WILL REPROGRAM. THIS IS CONSIDERABLY CHEAPER THAN BUYING ALL NEW MPU'S FROM MOTOROLA.

PLEASE LET US KNOW IF YOU APPROVE AND WE'LL START AS SOON AS POSSIBLE.

BILL TALEND 3-11-93

CY-DAVE TIMMERMAN
STEVE VILE

-> NSC.JFNORRIS J.F. NORRIS COMM
-> NSC.JKMURPHY JAMES K. MURPHY COMM
-> NSC.JJBRIGHI JEFFREY J BRIGHI COMM

—— Received from K9C.ELSHEENE 404/529-1003 10-18-92 07.05
-> RADIOSHOPS RACODO SHOP SDPVRS
OC:
-> ALLGENERALS ALL *GBSERXLS* EAST & WEST
-> MSC.WTWELLS WT WELLS MICE

All Radio Shop Supervisors:
As a readnder, no radio transfers are to be made without an approved radio txansfeir request. Follow MS Procedure #80.

In addition, all "new- Mobile radios for Maintenance of Itay w s t ñave approval of Mr. H. T. Wells, 529-1525 in Atlanta before installation, men you get radios in for Mbfff, advise *turn* when they are ready for installation. He is regponsihle for for limit* record, loeepinçf, incLudinçj approvingf the radio transfers for their Dept. He will tell you where each radio is to be installed.

BUS 10-18-92

—> NSC.JKMURPffiT	JMffiS K. *¥VR£Wi*	cam
—> N9C.J3EREGHI	*JBFFBBBl* J ERIGHI	QCMI
-> MSC.MICROSFA		COMM
-> RSC.CMDOBBO	*QBL* M. JdWSCN	COMM
-> N9C.BM3AUCP	BGBHCT A. GALLOP	am
—> N9C.FBG3B9CN	P.B.GD3SGN	COMM
-> MSC.HEGDES5	HABDU) P. GUESS	COMM
-> MSC.RDMTTCHE	R.D.MTTCHQX	COMM
-> KECHHfflE	PEEERM HADE	*cam*
—> N9C.BEHAEKIS	RICHARDHARRIS	COMM
-> MSC.WRHATCHE	W.R.HHK3ffiLi	COMM
—> H9C.6BJQHNB0	GftHY E.JCHH9CN	COMM
-> MSCFCDRMXlf	F.C. DAWOM	QCMM
-> N9C.DLHICKS	DBMvIK L. HECKS	COMM
-> MSC.BSOK	BDWffTO N. LOffi	COMM
-> MSCEMMOTT	DH«IS M lBUJIT	am
-> NSC.SajftRFIM	SEEVEM L MARTIN	COMM
"•> N9C.H1K5BIT	THOMAS L NESHIT	COMM
—> M9C.JDRQBERF	J D BGBE9RXS	COMM
-> H9C.IDSCHLAR	WJ SCHEAKE	COMM
-> MSC.LRSHOVAL	IflDIS R SBQNAIflSR	COMM
-> MSC.HESTANLE	HfiBOLD H *SBNUSi*	COMM
-> KSCRSMffiD	R. S. W«D	COMM
-> H9C.FOKEKIM	PBBD D. fKEKINS	COMM
-> WSC.CMOXSCH	CHARLES A ffHSGN	am
-> MSC.MOTALEND	TNJEfC, WELLIAMM.	C&S
-> N9C.ELSHEENE	IS. XJ. ʸ^*ᴷʷ^ᴹ^ᵀ	COMM
-> N9C.BB9HTH	RAH3A1X B SMITH	COMM
—> N9C.GSSMT1H	G.SBSSBf SMITH	COMM
-> 1BCJKCDMR	DAVID M TIMMERMAN	am
-> K9C.DtitV.r̄T	DAVID L. SGdr̄T	COMM
—>MBC JMBDRHk	R. M. HOFFMAN	COMM
-> K3CJSRFEHKHI	Roaar A PERKINS	COMM
-> MSC.MJMILSON	W. L. WELSCN	COMM
-> MSC.DMBELL	DONALD W BELL	COMM

_____Received from NSC.DSCOTT 404/529-2105 02-25-93 10.04
_____Received from NSC.DSCOTT 404/529-2105 02-25-93 09.45
-> GENSSUPVRSWEST NSC.WLWILSON
GENERALS AND SUPERVISORS - WESTERN REGION:
PLEASE USE THE BELOW INFORMATION TO REQUEST A LEASED RADIO CIRCUIT FROM RANDY FULTS'S GROUP.

DLS 2/25/93

_____Received from NSC.ENREF 404/529-1254 02-25-93 08.00
_____Received from NSC.ENREF 404/529-1254 02-25-93 07.59
-> NSC.DLKEITH DENNIS L KEITH COMM
-> NSC.ELSWEENE E. L. SWEENEY COMM
-> NSC.DSCOTT DAVID L. SCOTT COMM

D.L.S.;
I have put a form on the FMCOMM bulletin board for anyone needing to install a VHF lease circuit. Please forward this info to all of your personnel for use on future orders. Certain fields have to be filled out to send the MEMO, this will help obtain all necessary info for expedient handling. Below are instructions on including this font in your mailbox. If you have any questions please call.
Randy Fults

Access VHFLEASE ORDER Form on FMCOMM Bulletin Board

1. From your mailbox panel, go to the home position (Col. 1, Line 1). This is on the upper action bar line. If you are on a PC, the "Horn key can be used.

2. Key Z6 for Bulletin Board. Press <Enter>.

3. Enter the name of the Bulletin Board you wish to access: FMCOMM. Press <Enter>.

4. View any form on this bulletin board:
   . Select bulletin you wish to view, by putting an S next to it and press ENTER.
   . Browse the form to see what it contains. Press <PF12> to return the bulletin list.

5. Submit a VHFLEASE ORDER Form:
   . Type a "C" beside the. bulletin entitled VHFLEASE ORDER. Press <Enter>.
   The message "MEMO RECEIVED" will appear in the lower righthand corner of your screen. This means a copy of the reservation form» has been sent to your mailbox. Press <PF12>.
   You are returned to your mailbox, and a copy of the VHFLEASE ORD form will be in your mailbox as a memo entitled "BULLETIN".
   . Select the form, and complete the information requested.
   . Press <PF5> to save a copy.
   . Press <PF3> to send. (You do not have to specify a destination; form will go directly to D.L. Keith.
   . You will receive a confirmation through MEMO.

6. To cancel:
   . Select the MEMO confirmation you received.
   . Key the word "CANCEL" at the top.
   . Press <F3> to send.

SUBJECT: MT1000 Bulletin

Atlanta - March 3, 1993

19-000

ALL GENERAL COMMUNICATIONS SUPERVISORS:
ALL COMMUNICATIONS SUPERVISORS:

Some MTlOOO's have been accidentally put into the Quick Call mode **without the operator being aware of it.** This **happened** because the operator **pushed the monitor button and activated the Quick Call** mode. Once the radio **is in the Quick Call mode, it will not receive any signals** except the Quick Call **tone. This will make the radio appear to have a dead** receiver. The operator **can take the radio out of Quick Call by either cutting the** radio off and back on **or by pressing the PTT switch.**

To prevent Quick Call from being activated, please make sure Quick Call **and signalling are disabled on every radio which comes** through the radio **shop. Please see the** attached sheets **on how to disable Quick** Call. From the **main menu, go to F4 (CHANGE/CREATE/VIEW radio code plug** data). After **you get to the CHANGE screen, you can access the F3 (Quick** Call II Table) **and the F6 (PER CHANNEL: Frequency and Channel options).**

If there are any questions, please call R. E. Fults (M/W 529-1254) or **D.L Keith (M/W 529-1009).**

J. F. Norris

cy: Mr. D. L Scott *
Mr. E. L. Sweeney
Mr. R. E. Fults
Mr. D. L Keith

Attachments

```
M^ OROLA Radio Service Software          | Select Function Key Fl - F10.
MT1000        MODEL:H43GCJ7190CN         |
R03.01.00       S/N:751AQY1465           |
MAIN                                     |
```

Fl - HELP
F2 - **SERVICE**: al**ignment**
F3 - GET/SAVE/PROGRAM codeplug data from/to disk/codeplug
F4 - CHANGE/CREATE/VIEW radio codeplug data
F5 - PRINT/Display Feature List
F6 -
F7 -
F8 -
F9 - SETUP conputer configuration: drives, paths, com port
F10 - EXIT radio service software, return to **DOS**

Fl	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	**SERVICE**	**GET SAVE**	**CHANGE**	**PRINT/ DISPLAY**				SETUP	EXIT TO DOS

```
MOTOROLA Radio Service Software          | Select Function Key Fl - F10.
MT1000        MODEL:H43GCJ7190CN         |
R03.01.00       S/N:751AQY1465           |
CHANGE                                   |
```

Fl - HELP
F2 - PL Table
F3 - QUIK CALL II Table
F4 - SIGNALLING: Digital and DTMF (Requires Signalling Option)
F5 - **PER RADIO: Radio Options**
F6 - PER CHANNEL: Frequency and Channel Options
F7 -
F8 - SCAN: Features and Channels
F9 - BANDSPLIT
F10 - EXIT, Return to Main Menu

Fl	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	**PL**	**QUIK CALL**	**SIGNAL**	**PER RADIO**	PER CHANNEL		SCAN	BANDSPLIT	EXIT

MOTOROLA Radio Service Software
MT1000 MODEL:H43GCJ7190CN
R03.01.00 S/N:751AQY1465
CHANGE/QUIK CALL II

Enter or Use tl Keys to Scroll Value.
Use <ENTER> to Go to Next Feature.

QUIK CALL II CODE #1			QUIK CALL II CODE #2		
	FREQUENCY	MOTOROLA CODE		FREQUENCY	MOTOROLA CODE
TONE A	None Hz		TONE A	None Hz	
TONE B	None Hz		TONE B	None Hz	
GROUP CALL		Disabled	GROUP CALL		Disabled

F1 HELP F2 F3 F4 F5 F6 F7 F8 F9 F10 EXIT

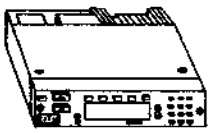
MOTOROLA Radio Service Software
MT1000 MODEL:H43GCJ7190CN
R03.01.00 S/N:751AQY1465
CHANGE/PER-CHANNEL

Use t± Keys to Enable/Disable Feature.
Use <ENTER> to Go to Next Feature.

CHANNEL	01
RECEIVE FREQUENCY	160.95000
TRANSMIT FREQUENCY	160.95000
TIME OUT TIMER	Enabled
RECEIVE ONLY CHANNEL	Disabled
TRANSMIT PL	Disabled
PAC-RT	Disabled
Rx SQUELCH (CS/PL/QC)	CS
Tx INHIBIT ON BUSY CH	Disabled
QUIK CALL II ALERT **TONE**	Disabled
SCAN CHANNEL LOCK-OUT	Enabled
SIGNALLING	Disabled

F2 DECR CHANNEL F3 INCR CHANNEL F4 DUPLICATE CHANNEL F5 ADD CHANNEL F6 DELETE CHANNEL F7 F8 CHANGE RX INJ F9 EXIT F10

RADIO BULLETIN



NS

COMMUNICATIONS

03-15-93

Subject: Battery Duty Cycle on MTIOOO and HT600 Radios

TO ALL C & S PERSONNEL:

There has been serveral complaints concerning the duty cycle of the **MTIOOO and HT600 battteries. In an effort to extend** the duty cycle **of the batteries the following information will help.**

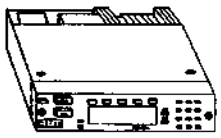
All new radio batteries are now coming with a sticker on the front of **the battery. This sticker states that** the battery should be charged **overnight before normal use of the radio** begins. In the manual for **the MTIOOO it states "The first time the** battery is charged or after **prolonged storage,** a **minimum of 14 hours** of **slow** charge time is **required. If the battery is charged at the** rapid **rate,** the indicator **will show complete after approximately one hour.** The additional **charge time at the slow rate is required** during this initial charge **to insure that full charge capacity is reached.** Subsequent charges **can be at the rapid rate or slow charge rate** depending on **the type of charger being used."**

Also available are battery analyzers which will rejuvinate weak **batteries with reconditioning methods of discharging and** recharging **(exercising) the battery fully. If you need more info on** these **analyzers call R. E. Fults or D. L. keith.**

S. **F.** Norris

CY: B. L. SYKES
J. L. BANE
L. E. HITT
R. L. JOHNSON

RADIO BULLETIN



NS

COMMUNICATIONS

03-18-93

Subject: Reverse Polarity on Motran 'T' Rack Speakers

TO ALL RADIO SHOP PERSONNEL:

A modification can be made to the Motran 'T' **Rack Engine** Speakers to **improve the audio clarity and volume.**

Simply reverse the polarity on the speaker of any 'T' Rack Motran radio and the volume will increase and Mill improve the clarity.

This modification has been made at a few shops and has **had** favorable **results. If you have any complaints about** this modification please **contact R. E. Fults .**

J. F. Norris

-> **NSC.DMTIMMER**	DAVID M TIMMERMAN	COMM
-> **NSC.DMMALOTT**	DENNIS M MALOTT	COMM
-> NSC.DLHICKS	DENVER L. HICKS	COMM
-> NSC.WMTALEND	TALEND, WILLIAM M.	COMM
-> NSC.CAWILSON	CHARLES A WILSON	COMM
-> NSC.CMJOHNSO	CARL M. JOHNSON	COMM
-> NSC.SPHUFF	S.P.HUFF	COMM
-> NSC.AWDANIEL	A.W. DANIELSEN	COMM
-> NSC.WRHATCHE	W.R.HATCHELL	COMM
-> NSC.JRCHASTA	J. RODNEY CHASTAIN	COMM
-> NSC.FCDAMRON	F.C. DAMRON	COMM
-> NSC.MRKIRK	KIRK, M. R.	COMM
-> NSC.HSEKSIOG	EKSIOGLU, H. S.	C&S

RADIO BULLETIN

NS COMMUNICATIONS

03-22-93

Subject: Duration of DTMF Tones on Spectra Engine Radios

TO ALL RADIO SHOP PERSONNEL:

The Spectra Cleancab Engine Radio* hav« a setting for the DTMF ton* duration. This ha« a •inlnun and a waxinun setting for the tone. The duration setting should be 1.0 second for the minimum and 5.0 seconds for the wax1nun.

Please nake sure these settings are programed in all Spectra Cleancab radios that cone through your shop.

If you have any questions about these changes notify R. E. Fults or D. L. Keith.

~2$. F. Morris

NS NORFOLK SOUTHERN

RADIO BULLETINS

DRAW:	FIE:	DATE:
REF	BULLET6.GAL	03-22-93

_____Received from NSC.ELSWEENE 404/529-1003 **06-01-93 14.18**

-> RADIOSHOPS RADIO SHOP SUPVRS

CC:

-> NSC.JFNORRIS J.F. NORRIS COMM

-> ALLGENERALS ALL GENERALS EAST & WEST

All:

Note information below from Randy Fults concerning Motorola Programing manuals. If more info is needed contact Randy Fults.

ELS DLS 6-1-93

cc: Mr. Norris
General Supervisors

-> NSC.REFULTS RANDY E FULTS COMM

Below is a list of the Motorola programming manuals for the Motorola radios we have throughout Norfolk Southern. These manuals can be obtained from Motorola at any time. The letter that belongs after the dash in the part number has been left off, this letter stands for the version of software. Motorola will send the latest version available. If manuals for the Radius software is needed contact me and I will handle.

RADIO	MANUAL PART NUMBER	COST
MCX1000	68P02902A30-	$25.00
MT1000	68P81050C20-	25.00
HT600	68P81045C55-	25.00
MAXTRAC	68P80900Z03-	25.00
and	68P80310B53-	25.00
DESKTRAC	68P02982G55-	25.00
SABER	68P81052C95-	8.00
MOBILE SPECTRA	68P80101W48-	25.00

Randy E. Fults

Randy E. Fults

-> NSC.JKMURPHY	JAMES K. MURPHY	COMM
-> NSC.JJBRIGHI	JEFFREY J BRIGHI	COMM
-> NSC.MHCROSHA	M. W. CROSHAW	COMM
-> NSC.CMJOHNSO	CARL M. JOHNSON	COMM
-> NSC.RAGALLOP	ROBERT A. GALLOP	COMM
-> NSC.PBGIBSON	P.B.GIBSON	**COMM**
-> NSC.HPGUESS	HAROLD P. GUESS	**COMM**
-> NSC.RDMITCHE	R.D.MITCHELL	COMM
-> NSC.PMHARE	PETER M HARE	**COMM**
-> NSC.RBHARRIS	RICHARD B. HARRIS	**COMM**
-> NSC.WRHATCHE	W.R.HATCHELL	COMM
-> NSC.GEJOHNSO	GARY E.JOHNSON	**COMM**
-> NSC.FCDAMRON	F.C. DAMRON	**COMM**
-> NSC.DLHICKS	DENVER L. HICKS	**COMM**
-> NSC.ENLOWE	EDWARD N. LOWE	**COMM**
-> NSC.DMMALOTT	DENNIS M MALOTT	**COMM**
-> NSC.SLMARTIN	STEVEN L MARTIN	**COMM**
-> NSC.TLNESBIT	THOMAS L NESBIT	**COMM**
-> NSC.JDROBERT	J D ROBERTS	**COMM**
-> NSC.WJSCHLAK	W J SCHLAKE	**COMM**

-> NSC.LRSHOWAL	LOUIS R SHOWALTER	COMM
-> NSC.HHSTANLE	HAROLD H STANLEY	COMM
-> NSC.RSWARD	R. S. WARD	COMM
-> NSC.CAWILSON	CHARLES A WILSON	COMM
-> NSC.WMTALEND	TALEND, WILLIAM M.	COMM
-> NSC.MRKIRK	KIRK, M. R.	COMM
-> NSC.ELSWEENE	E. L. SWEENEY	COMM
-> NSC.RBSMITH	RANDALL B SMITH	COMM
-> NSC.GSSMITH	G.STEPHEN SMITH	COMM
-> NSC.DMTIMMER	DAVID M TIMMERMAN	COMM
-> NSC.DSCOTT	DAVID L. SCOTT	COMM
-> NSC.RMHOFFMA	R. M. HOFFMAN	COMM
-> NSC.RAPERKIN	ROCKY A PERKINS	COMM
-> NSC.WLWILSON	W. L. WILSON	COMM
-> NSC.DWBELL	DONALD W BELL	COMM

_____Received from NSC.DSCOTT 404/529-2105 05-22-93 11.07
-> GENSSUPVRSWEST NSC.WLWILSON
GENERALS AND SUPERVISORS - WESTERN REGION:
FOR YOUR INFORMATION AND GUIDANCE.
DLS 5/22/93

_____Received from NSC.ENREF 404/529-1254 05-21-93 14.10
-> NSC.DSCOTT DAVID L. SCOTT COMM
-> NSC.ELSWEENE E. L. SWEENEY COMM
ELS:
DLS:

In an effort to make databases available to the field, I have put a copy of the VHF license database in TSO. You can pull this database down just like you do the Motorola Software. The name of the file is 'ENREF.LICENSE.ZIP'.

I encourage anyone to pull this info down to use and examine for accuracy. There are some fields in the database which may not make sense, so I will make up a sheet which explains the fields. Please help me in eliminating licenses which are not needed or have wrong info. The file is a simple database file and can be read by many database oriented programs (Dbase III or IV, Manager, Fox Pro, etc.)

This is just a start so be patient with this procedure and give a few suggestions on how you would like this info to be presented in the form of a program. I have a few ideas but I would like to hear from you. The program will be able to sort on supervisor, expiration date, state, call sign, etc. I will try to update the TSO file every month.

Thanks
Randy

-> NSC.WLWILSON W. L. WILSON COMM
-> NSC.WJSCHLAK W J SCHLAKE COMM
-> NSC.RSWARD R. S. WARD COMM
-> NSC.RMHOFFMA R. M. HOFFMAN COMM
-> NSC.RDMITCHE R.D.MITCHELL COMM
-> NSC.RAPERKIN ROCKY A PERKINS COMM
-> NSC.RAGALLOP ROBERT A. GALLOP COMM
-> NSC.PMHARE PETER M HARE COMM
-> NSC.PBGIBSON P.B.GIBSON COMM
-> NSC.JDROBERT J D ROBERTS COMM
-> NSC.HHSTANLE HAROLD H STANLEY COMM
-> NSC.DWBELL DONALD W BELL COMM
-> NSC.CMJOHNSO CARL M. JOHNSON COMM
-> NSC.SPHUFF S.P.HUFF COMM
-> NSC.JKMURPHY JAMES K. MURPHY COMM
-> NSC.GEJOHNSO GARY E.JOHNSON COMM
-> NSC.GBKENDRI GARY B. KENDRICK COMM
-> NSC.DMMALOTT . DENNIS M MALOTT COMM
-> NSC.DLHICKS DENVER L. HICKS COMM
-> NSC.AWDANIEL A.W. DANIELSEN COMM
-> NSC.JRCHASTA J. RODNEY CHASTAIN COMM
-> NSC.FCDAMRON F.C. DAMRON COMM
-> NSC.HSEKSIOG EKSIOGLU, H. S. C&S

_____Received from NSC.ELSWEENE 404/529-1003 06-28-93 08.09
-> RADIOSHOPS RADIO SHOP SUPVRS
CCl
-> ALLGENERALS ALL GENERALS EAST & WEST

All:
Info on Motorola software manuals.
ELS DLS 6-28-93

---- Received from NSC.REFULTS 404/529-1254 06-21-93 08.18
--> NSC.DSCOTT DAVID L. SCOTT COMM
--> NSC.ELSWEENE E. L. SWEENEY COMM

DLS:
ELS:

Below is a list of the Motorola Manuals for programming the Motorola radios we have throughout Norfolk Southern. These manuals can be obtained from Motorola at any time. The letter that belongs after the dash in the part number has been left off, this letter stands for the version of software requested. Motorola will send the latest version available. If copies of the Radius software is needed contact me and I will handle.

RADIO		MANUAL PART NUMBER	COST
MCX1000		68P02902A30-	$25.00
MT1000		68P81050C20-	25.00
HT600		68P81045C55-	25.00
MAXTRAC		68P80900Z03-	25.00
	and	68P80310B53-	25.00
DESKTRAC		68P02982G55-	25.00
SABER		68P81052C95-	8.00
MOBILE SPECTRA		68P80101W48	25.00

Please note that these are software manuals and not service manuals.

Thanks,
Randy E. Fults

-> NSC.JKMURPHY JAMES K. MURPHY COMM
-> NSC.JJBRIGHI JEFFREY J BRIGHI COMM
-> NSC.MWCROSHA M. W. CROSHAW COMM
-> NSC.CMJOHNSO CARL M. JOHNSON **COMM**
-> NSC.RAGALLOP ROBERT A. GALLOP COMM
-> NSC.PBGIBSON P.B.GIBSON COMM
-> NSC.HPGUESS HAROLD P. GUESS COMM
-> NSC.RDMITCHE R.D.MITCHELL COMM
-> NSC.PMHARE PETER M HARE COMM
-> NSC.RBHARRIS RICHARD B. HARRIS COMM
-> NSC.WRHATCHE W.R.HATCHELL COMM
-> NSC.GEJOHNSO GARY E.JOHNSON COMM
-> NSC.FCDAMRON . F.C. DAMRON COMM
-> NSC.DLHICKS DENVER L. HICKS COMM
-> NSC.ENLOWE EDWARD N. LOWE COMM
-> NSC.DMMALOTT DENNIS M MALOTT COMM
-> NSC.SLMARTIN STEVEN L MARTIN COMM
-> NSC.TLNESBIT THOMAS L NESBIT COMM

SERVICE AND REPAIR NOTES

bulletin

MOTOROLA

COMMUNICATIONS AND BItCTHONICS, INC.

A SUBSIDIARY OF MOTOROLA, INC.

TECHNICAL INFORMATION CENTER • 8000 W. SUNRISE BLVD. • FT. LAUDERDALE. FL 33322 • 1.800-523-4007

SRN - 1143
APC- 604,617,624,529
June, 1993

Deadline: June 1998

Memo To: SRN Mailing List

From: Product Services, Plantation, FL.

Subject: **Spectra Fading Buttons**

Spectra control head keyboard buttons can fade when exposed to ultraviolet light (sunlight) over time. This condition exists on all Spectra units shipped before Tune 1993.

Replacement Control Head buttons will be provided free of charge by referring to this bulletin. Upgraded button(s) order(s) can be submitted by filling out and mailing a copy of the order form (on reverse side) to National Parts Department at:

Motorola C & E Parts
1313 E. Algonquin Road
Schaumburg, Illinois 60196
M/F: Spectra Buttons

One sheet should be used for each radio type. There are three buttons which are common to all control heads. These common buttons types are already checked off. Other buttons will vary depending on the radio type and customer options. SP Buttons are not covered.

This bulletin authorizes Parts Only and **No Labor Warranty is implied.**

If applicable, enter this information or not* this bulletin number and subject material *in* the appropriate equipment instruction manuals and make necessary schematic diagram changes*

Enter thb bulletin in the comet MASTER and **CLASSIFIED INDICES for** future reference.

RADfO PRODUCTS GROUP
MOTOROLA INC.

SPECTRA REPLACEMENT **BUTTON ORDER FORM**
SRN 1143 **(Check if Required)**

FUNCTION BUTTONS

MPL	3880197P02	•
Scan	3880197P03	•
Call	3880197P12	•
Msg	3880197P13	•
Sel	3880197P18	X
Mon	3880197P19	☐
Emer	3880197P26	D
Phon	3880197P44	D
Ø	3880197P49	•
Ents	3880197P52	D
Srch	3880197P61	•
Page	3880197P63	•
Pri	3880197P72	D
RTT	3880197P75	•
URG	3880197P92	D

KEYPAD BUTTONS

1	3880196P01D
2	3880196P02D
3	3880196P03D
4	3880196P04D
5	3880196P05D
6	3880196P06 ☐
7	3880196P07D
8	3880196P08n
9	3880t96P09D
0	3880196P1 on
*Rcl	3880196P21n
#Del	3880196P22D
1Sts	3880196P23D
2Pge	3880196P24D
3Lck	3880196P25D
4Sts	3880196P26D
5Rpg	3880196P27D
6Msg	3880196P28D
7H/L	3880196P29D
8Mon	3880196P30D
9Dir	3880196P31 ☐
Mon	3880196P32O
H/L	3880196P33O
DIR	3880196P34D

ROCKER BUTTONS

y Modc A	3880009P0inr
∇ Vol Δ	3880009P02 X

Total Number of Radios Requiring Replacement Buttons _____

Mail Order Form To:

Motorola C & E Parts Department
1313 E. Algonquin Road
Schaumburg, IL 60196
M/F Spectra Buttons / C.O.P.

Customer No_____

Return Address:

Company_____
Address _____
City/State/Zip._____ Attn:_____

Subject: Ship To Addresses for Foreign Radios

Atlanta - July 30, 1993
19-000

General Supervisors Communications:
Supervisors Communications:

Attached is AAR's Mailing Information list for return of Foreign Railroads Radios and **End** of Train Devices. Please see that all Foreign Railroad Radios are **returned to** the **proper** address shown. If a radio shows up that does not belong **to any** Railroad on **the** list, **please** contact D. L. Keith.

Randy E. Fults

Randy E. Fults

CY: **D. L. Scott**
E. L. Sweeney
D. L. Keith

June, 1993

MAILING INFORMATION FOR RADIOS

ID TAG or STENCILING	SHIPPING ADDRESS
AMTRAK	
AMTRAK & LOGO	Amtrak Radio Shop 30th Street Station Lower Level Philadelphia, PA 19104 Phone: (215) 895-7658
ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY	
ATSF-XXXXXX	Mr. Robert W. Ennis The A.T. & S.F. Railway Co. Communications Repair Shop 1170 W. 3rd Street San Bernardino, CA 92410 Phone: (714) 387-1458 Mr. Al I. Moen The A.T. & S.F. Railway Co. Communications Repair Shop 5800 N. Main Street Fort Worth, TX 76179 Phone: (817) 232-7845 Mr. Leo E. Sullivan The A.T. & S.F. Railway Co. Communications Repair Shop Mechl. Training Building 26th & Argentine Streets Kansas City, KS 66106 Phone: (913) 551-4442
BANGOR & AROOSTOOK RAILROAD	
BAR	Bangor & Aroostook Railroad RR 2, Box 45 Bangor, ME 04401 Phone: (207) 848-5721
BURLINGTON NORTHERN RAILROAD	
BNA-XXXX	Burlington Northern Railroad Comms. Dept. - Radio Shop 105 N. E. 31st Avenue Minneapolis, MN 55418 Pnone: (612) 298-2766

INFORMATION FOR RADIOS

ID TAG or STENCILING	SHIPPING ADDRESS
THE BELT RAILWAY COMPANY OF CHICAGO	
BRC or Belt Railway	The Belt Railway Co. of Chicago Communications Department 6900 S. Central Street Bedford Park, IL 60638 Phone: (708) 496-4051
CANADIAN NATIONAL NORTH AMERICA	
CN	Grand Trunk Western Railroad Radio Shop 24002 Vreeland Road Flat Rock, MI 48134 Phone: (313) 396-6578
CHICAGO & NORTH WESTERN TRANSPORTATION COMPANY	
CNW ME-XXX	Chicago & North Western Trans. Co. Comms. Department & Radio Shop 301 W. Lake Street Northlake, IL 60164 Phone: (312) 559-6107
CONSOLIDATED RAIL CORPORATION	
CR (Serial #)	Consolidated Rail Corporation Radio Maintainer Selkirk Yard Selkirk, NY 12158 Phone: (518) 767-6560 Consolidated Rail Corporation Radio Maintainer 218 Enola Road Enola, PA 17025 Phone: (717) 732-7442 Colsolidated Rail corporation Radio Maintainer Conway Yard - Rt. 65 Conway, PA 15027 Phone: (412) 857-6221 Consolidated Rail Corporation Radio Maintainer Elkhart Yard Lusher Ave. & Nappanee street Elkhart, IN 46515 Phone: (219) 296-2343

ID TAG or STENCILING	SHIPPING ADDRESS
CENTRAL VERMONT RAILWAY	
C. V. RY. St. Albans, VT	Central Vermont Railway Lower Hoyt Street St. Albans, VT 05478 Phone: (802) 527-3661
CSX TRANSPORTATION, INC.	
CSX xxxxxx	B. C. Goad Supervisor, Communications CSX Transportation, Inc. 800 S. 10th Street Louisville, KY 40203 Phone: (502) 364-1142
DELAWARE OTSEGO CORPORATION	
NYSW xxxx	Jerry Lesher NYS&W Railway Corporation Little Ferry Diesel Terminal 47 Bergen Turnpike Ridgefield Park, NJ 07660
DENVER & RIO GRANDE WESTERN RAILROAD	
RIO GRANDE RAILROAD	L. D. Busboom Supervisor, Communications Denver & Rio Grande Western RR 5090 Kalamath Street Denver, CO 80221 Phone: (303) 595-2244
DULUTH, MISSABE & IRON RANGE RAILWAY	
DM & IR or MISSABE	Duluth, Missabe & Iron Range Rwy. Communications Department 329 Second Street Proctor, MN 55810 Phone: (218) 628-4144
DULUTH, WINNIPEG & PACIFIC RAILWAY	
DW & P	Mr. Bill Wallace Equipment Maintainer Duluth, Winnipeg & Pacific Rwy. RR 4, Box 3008 Superior, WI 54880 Phone: (218) 726-9219

INFORMATION FOR RADIOS

ID TAG or STENCILING	SHIPPING ADDRESS
GRAND TRUNK WESTERN RAILROAD	
GRAND TRUNK or GT xxxx	Grand Trunk Western Railroad Radio Shop 24002 Vreeland Road Flat Rock, HI 48134 Phone: (313) 396-6578
INDIANA HARBOR BELT RAILROAD	
HS-101, 102 & 103 TS - 201 through 264	Indiana Harbor Belt Railroad Radio Shop 2721 - 161st Street Hammond, IN 46325 Phone: (219) 989-4942
KANSAS CITY SOUTHERN RAILROAD	
KCS RWY	Kansas City Southern Railroad Radio Shop - General Office Bldg. 4601 Blanchard Road Shreveport, LA 71109 Phone: (318) 227-7188
LONG ISLAND RAILROAD	
LONG ISLAND RAILROAD	R. Ingargidla Foreman Long Island Railroad Babylon Radio Shop 70 Foxglove Road West Islip, NY 11795 Phone: (718) 990-7660
METRO NORTH COMMUTER RATT ROAD	
	Metro North Commuter Railroad 1 Croton Point Avenue Croton On Hudson, NY 10520 Att: Radio Shop

INFORMATION FOR RADIOS

ID TAG or STENCILING	SHIPPING ADDRESS
NORFOLK SOUTHERN CORPORATION	
Mxxxx, MCSxxxxx, MLAxxxxx, MLBxxxxx, MLCxxxxx, MLDxxxxx, MLKxxxxx, MLSxxxxx, MLXxxxxx, MLYxxxxx, MLZxxxxx, LLxxxxxx, and Txxxx	Norfolk Southern Corporation Supervisor Communications Shaffers Crossing Radio Shop Roanoke, VA 24042 Phone: (703) 981-4189 Norfolk Southern Corporation Supervisor Communications 1735 Condit Street Decatur, IL 62521 Phone: (217) 425-2114 Norfolk Southern Corporation Supervisor Communications Locomotive Shop 24424 North Praire Road Bellevue, OH 44811 Phone: (419) 483-1843 Norfolk Southern Corporation Supervisor Communications De Butts Yard Radio Shop 34 Scruggs Street Chattanooga, TN 37408 Phone: (615) 697-1015
PADUCAH & LOUISVILLE RAILWAY	
P&L (green paint) PLT xxx PLR xxx	Paducah & Louisville Rwy Radio Shop 1500 Kentucky Avenue Paducah, KY 42001 Phone: (502) 444-4331
PROVIDENCE & WORCESTER RAILROAD COMPANY	
PW RR XX	Providence & Worcester Railroad Co,. 382 Southbridge Street Worcester, MA 01601 Phone: (508) 799-4472

INFORMATION FOR RADIOS

ID TAG or STENCILING	SHIPPING ADDRESS
RICHMOND, FREDERICKSBURG & POTOMAC RWY CO.	
R F & P	CSX Transportation Mr. W. F. Zieber 5225 Old Osborn Tpk Richmond, VA 23231 Phone: (804) 226-7536
SOO LINE RAILROAD	
SOO LINE XXXX	CP Rail System (SOO Line) Radio Shop 415 East Green Street Bensenville, IL 60106 Phone: (312) 860-4443
SOUTHERN PACIFIC TRANSPORTATION COMPANY	
SPT CO. Axxxx, ACxxxx, ALxxxx, ASxxxx, ANxxxx or ARxxxx	Southern Pacific Transportation Co. c/o Radio Shop (VMS) 1900 - 7th Street Oakland, CA 94607 Phone: (415) 891-7687
UNION PACIFIC RAILROAD	
UPRR RVXXXXX UPRR RAXXXXX UPRR RBXXXXX	Union Pacific Railroad Telecommunications Repair Shop 3300 - 14th Avenue Council Bluffs, IA 51501 Phone: (402) 271-3605
WISCONSIN CENTRAL LIMITED	
WCL xxxx	Wisconsin Central Limited 1625 Depot Street P. O. Box 348 Stevens Point, WI 54481

June, 1993

MAILING INFORMATION FOR END OF TRAIN UNITS

ID TAG or STENCILING	SHIPPING ADDRESS
ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY	
Property of AT&SF Rwy. Co. or Santa Fe Railway	Mr. Ton Atkins A.T. & S.F. Rwy. Co. Communications Building 4515 Kansas Avenue Kansas City, KS 66109 Phone: (913) 551-4615
BANGOR & AROOSTOOK RAILROAD	
BAR	Bangor & Aroostook Railroad RR 2 - Box 45 Bangor, ME 04401 Phone: (207) 848-5721
BURLINGTON NORTHERN RAILROAD	
BN-xxxx (Pulse E.O.T.)	Burlington Northern Railroad Comms. Department, Radio Shop 105 N.E. - 31st Avenue Minneapolis, MN 55418 Phone: (612) 298-2766
CANADIAN NATIONAL NORTH AMERICA	
CNQ XXXXX	Grand Trunk Western Railroad Radio Shop 24002 Vreeland Road Flat Rock, MI 48134 Phone: (313) 396-6578
CENTRAL VERMONT RAILWAY	
C. V. RY. St. Albans, VT	Central Vermont Railway Lower Hoyt Street St. Albans, VT 05478 Phone: (802) 527-3461
CHICAGO & NORTH WESTERN TRANSPORTATION COMPANY	
CNW-4 or 5 digits	Chicago & North Western Trans. Co. Proviso-Diesel Shop 5050 W. Lake Street Melrose Park, IL 60160 Phone: (708) 547-4294

INFORMATION FOR END OF TRAIN UNITS

ID TAG or STENCILING	SHIPPING ADDRESS
CONSOLIDATED RAIL CORPORATION	
CR 9XXXXX	Consolidated Rail Corporation Radio Maintainer Selkirk Yard Selkirk, NY 12158 Phone: (518) 767-6560
	Consolidated Rail Corporation Radio Maintainer 218 Enola Road Enola, PA 17025 Phone: (717) 732-7442
	Consolidated Rail Corporation Radio Maintainer Convay Yard - Rt. 65 Conway, PA 15027 Phone: (412) 857-6221
	Consolidated Rail Corporation Radio Maintainer Elkhart Yard Lusher Ave. & Nappanee Street Elkhart, IN 46515 Phone: (219) 296-2343
CSX TRANSPORTATION, INC.	
CSX XXXXXX	T. W. Hallmark Supervisor, Communications CSX Transportation US Mail 2840 Seaboard Road Tarrant, AL 35217 Truck/UPS 2000 Brennen Street Birmingham, AL 35234 Phone: (205) 849-2427
DENVER & RIO GRANDE WESTERN RAILROAD	
D & R G W RR	L. D. Busboom Supervisor, Communications Denver & Rio Grande Western RR 5090 Kalamath Street Denver, CO 80221 Phone: (303) 595-2244

INFORMATION FOR END OF TRAIN UNITS

ID TAG or STENCILING	SHIPPING ADDRESS
DULUTH, MISSABE & IRON RANGE RAILWAY	
DM & IR or MISSABE	Duluth, Missabe & Iron Range Rwy. Communications Department 329 Second Street Proctor, MN 55810 Phone: (218) 628-4144
DULUTH, WINNIPEG & PACIFIC RAILWAY	
DW & P	Mr. Bill Wallace Equipment Maintainer Duluth, Winnipeg & Pacific Rwy. RR 4, Box 3008 Superior, WI 54880 Phone: (218) 726-9219
GRAND TRUNK WESTERN RAILROAD	
GTW	Grand Trunk Western Railroad Radio Shop 24002 Vreeland Road Flat Rock, MI 48134 Phone: (313) 396-6578
INDIANA HARBOR BELT RAILROAD	
IHB 803XX	Indiana Harbor Belt Railroad Radio Shop 2721 - 161st Street Hammond, IN 46325 Phone: (219) 989-4942
KANSAS CITY SOUTHERN RAILROAD	
KCS	Kansas City Southern Railroad Mech. Dept. - Car Dept. 4601 Blanchard Road Shreveport, LA 71107 Phone: (318) 227-7101

INFORMATION FOR END OF TRAIN UNITS

ID TAG or STENCILING	SHIPPING ADDRESS
NORFOLK SOUTHERN CORPORATION	
Dxxxx or Xxxxx (Southern Technologies)	Norfolk Southern Corporation Supervisor Communications Shaffers Crossing Radio Shop Roanoke, VA 24042 Phone: (703) 981-4189 Norfolk Southern Corporation Supervisor Communications 1735 Condit Street Decatur, IL 62521 Phone: (217) 425-2114 Norfolk Southern Corporation Supervisor Communications Locomotive Shop 24424 North Praire Road Bellevue, OH 44811 Phone: (419) 483-1843 Norfolk Southern Corporation Supervisor Communications 34 Scruggs Street Chattanooga, TN 37408 Phone: (615) 697-1015
PADUCAH & LOUISVILLE RAILWAY	
P&L OXX	Paducah & Louisville Rwy Radio Shop 1500 Kentucky Avenue Paducah, KY 42001 Phone: (502) 444-4331
PROVIDENCE & WORCESTER RAILROAD COMPANY	
P & W RR (DSL)	Providence & Worcerter RR Co, 382 Southbridge Street Worcester, MA 01601 Phone: (508) 799-4472
RICHMOND, FREDERICKSBURG & POTOMAC RWY CO.	
R F & P XXXXX	CSX Transportation Mr. W. P. Zieber 5225 Old Osborn Tpk Richmond, VA 23231 Phone: (804) 226-7536

INFORMATION FOR END OF TRAIN UNITS

ID TAG or STENCILING	SHIPPING ADDRESS
SOO LINE RAILROAD	
SOO LINE XXXX	CP Rail System (SOO Line) Radio Shop 415 East Green Street Bensenville, IL 60106 Phone: (312) 860-4443
SOUTHERN PACIFIC TRANSPORTATION COMPANY	
SPT CO. ECxxxx, EDxxxx, EPxxxx, ESxxxx, ETxxxx, HCxxxx, HPxxxx, or HTxxxx	St. Louis Southwestern Railway Co. c/o Radio Shop (GDR) 1400 E. 2nd Street Pine Bluff, AR 71601 Phone: (501) 541-1642
UNION PACIFIC RAILROAD	
UPRR (Some) (To verify contact: Mr. R. J. Krai) Phone: (402) 271-4534)	Union Pacific Railroad Teleconunucations Repair Center 3300 - 14th Avenue Council Bluffs, IA 51501 Phone: (402) 271-3605
WISCONSIN CENTRAL LIMITED	
WCET XXXX	Wisconsin Central Limited 1625 Depot Street P.O. Box 348 Stevens Point, WI 54481

Subject: Radius Radio Products

Atlanta - August 2, 1993

365

GENERAL SUPERVISORS, COMMUNICATIONS:
SUPERVISORS, COMMUNICATIONS:

Just possibly, "someone is listening." After 2 years of using the Radius line of radios, a few complaints have been brought to my attention from our radio shops and radio users. I have forwarded these complaints to Radius and Motorola representatives.

The Radius M200 series radios have been replaced by the GM300 series. This radio is virtually identical to the M200 series with some distinctive changes which are improvements according to the responses I have received from you. The price of the GM300 series is slightly less than the M200 series, but new software will be needed to program them. A site license for the GM300's software is being handled; meanwhile, the major shops will be equipped with this software.

It is very important that each of you furnish your input to me on the products we supply to our customers. Please evaluate these radios and other products you sent out of your shops, and keep myself and R. E. Fults informed so we can see that the proper authorities can be notified of complaints or changes.

J. F. Norris

cc: Mr. D. L. Scott
Mr. E. L. Sweeney
Mr. R. E. Fults

EXPANDING COMMUNICATIONS

Radius®

MOTOROLA

MOBILE TWO-WAY RADIOS

Radius GM300

Break through to a world of new possibilities.

Expand the performance capabilities of your **mobile** work force with Radius' GM300 Series Mobile Radios. At the forefront of mobile radio design, the GM300 extends our break-through product line by being fully compatible with the GP300 Portable Series.

Both GM300 models, the 8-channd and **the 16-channel,** Incorporate state-of-the-art technology, adapting to meet **your** specific needs no matter how often they change...and **are available at a price readily affordable by all users.**

Advanced features fnctude User Programmable **Priority** Channel Scan and Unlimited Private Line/Digital **Private** Line (PL/DPL). The 16-channel model includes signalling compatibility with Radius RapidCall Portable Radios. M these features are packaged in **a sleek, nnder-dasfc Wit** bearing the trusted Motorola **name.**

Open up a world of new possibilities for your communi-cations needs...with Radius' GM300 Series Mobile **todtos.**

Breakthrough technology hits the road.

Choice of Power and Versatility

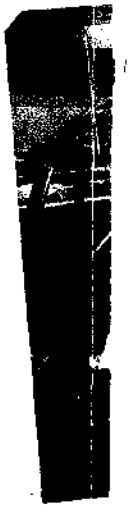
Hie GM300 is available in multiple bands with variable power levels to meet your specific needs:

VHF—8 or 16 channels with variable power from 1 to 25 watts and fixed power of 45 watts on selected models.

UHF—8 or 16 channels with variable power from 1 to 25 watts and up to 40 watts on selected models.

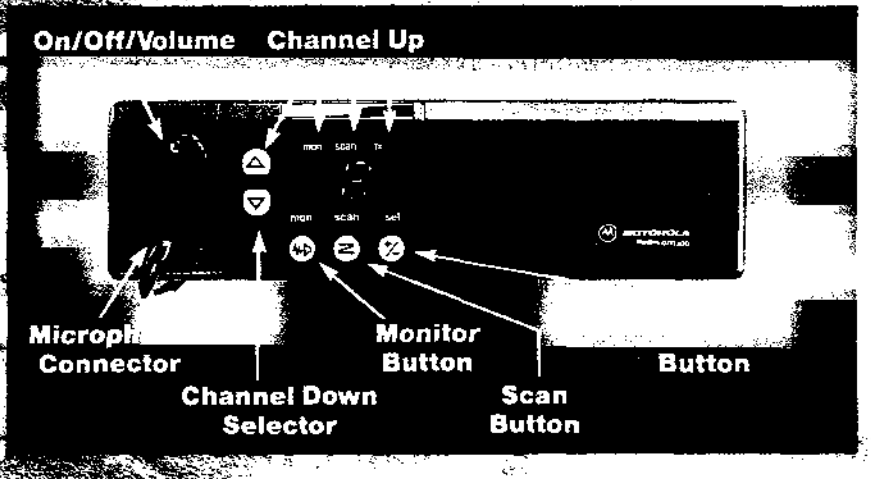
Synthesized and Field Programmable

Your local Radius dealer can add or change frequencies or other individual characteristics, such as PL or Unit ID. This keeps the system flexible to meet your ever-changing needs and minimizes down time. The GM300 is also electronically tuned so your radio automatically adjusts for optimal performance every time you select a channel.



Unlimited Multiple-Coded Squelch Capability (PL/DPL)

The GM300 offers **two** codes per channel (one for each transmit and receive frequency). You will hear only those calls accompanied by your unit's PL/DPL code and can place calls only to those that accept your code. This feature gives you virtually unlimited opportunity for separate talk groups (16 PL/DPLs with the 8-channel model and 32 PL/DPLs with the 16-channel model), matching the capabilities of the GP300 Portable Series.



Wide Band Frequency Separation

Wide bandwidth allows the addition or changing of frequencies anywhere within the radio's operating band without compromising clarity or performance.

Priority Channel Scan

Both the 8 and 16-channel GM300 feature User-Programmable Priority Channel Scan. This gives the radio operator the ability to program a single scan list from the front panel of the GM300 which can then be used to scan multiple channels at the push of a button. This list can be tailored to the operator's needs at any given time. A priority channel can also be designated within the scan £st and monitored more frequently.

In addition, the 16-channel GM300 features Pre-Programmed Priority Channel Scan. Your local Radius Dealer can program a separate scan list for each channel allowing the radio operator to check for messages from multiple channels.

Scan Nuisance Channel Delete

When irrelevant conversation on a "nuisance" channel ties up your radio's scan feature, you can temporarily remove it at the press of a button.

Busy Channel Lock-Owt

This radio feature keeps lines of commmkatJon dear by preventing the radio from receiving unauthorized transmissions or transmitting on a busy channel

Tkne-Out Timer

Transmissions can be limited to 60 seconds each, reducing busy channel aggravation. The radio automatically dekeys when the limit is reached. Transmission duration can be programmed to time periods other than 60 seconds, if desired.

Superior Audio Clarity

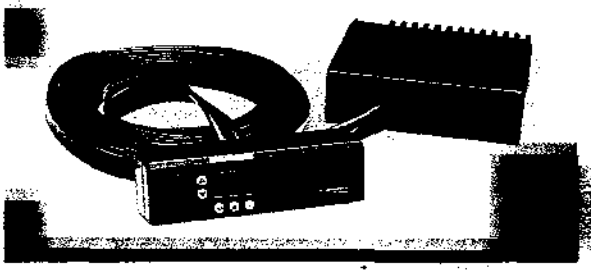
Motorola's integral 3 Watt, front-facing speaker and compact, high-performance microphone provide cleai; crisp sound and transmission.

Local Area Operation

The GM300 offers maximum wide area coverage because of its high sensitivity receiver. However, in some congested urban areas, high sensitivity results in the reception of interfering signals from numerous sources, such as high power TV and paging stations. For these situations, the dealer can program any channel for ^fcxal operation". This means the receiver will have Additional interference protection within a limited coverage area. If the user sometimes requires wide area coverage on that same frequency, another channel location can be used to program that frequency for normal operation.

Compact and Convenient

The GM300 is designed to be sleek and compact, fitting securely under the dash with a standard one-piece mounting bracket



Remote Mount Capability

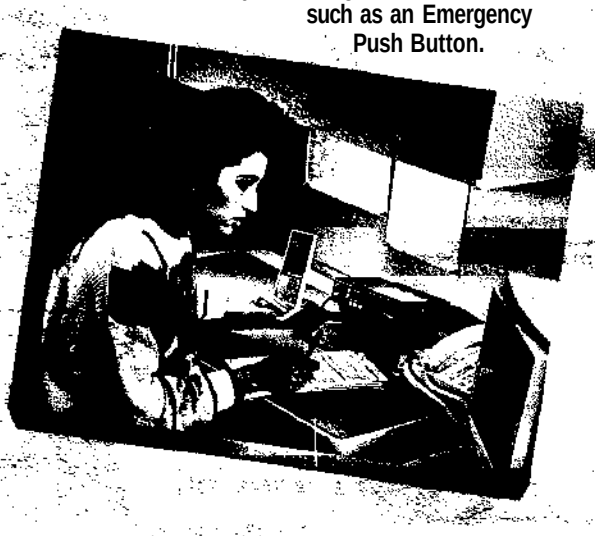
The Remote Mount Kit provides the necessary equipment to detach the front panel controls of the GM300 from the transceiver. This allows for the installation of the transceiver box in the vehicle's trunk or under the seat.

Easy-To-Operate

Mobile users will appreciate the illuminated control buttons for easy night time use. In addition, a large LED channel display and indicators provide information as to the current operating status.

RapMCall Signalling: A good reason to expand to the 16-channel model.

The 16-channel GM300 provides three types of signalling formats-Quik-Call II, MDC-1200 and DTMF-making your mobile fully compatible with GP300 Portable Radios. A mobile unit can be programmed, for example, to send an individual ID number. Each time the Push-To-Talk button is depressed, the corresponding control unit displays this ID. Other capabilities include the ability to page, call, or check a particular unit, to activate the vehicle's horn or lights and to send or receive an Emergency Alert. Radius RapidCall packages also include the Expanded Accessory Connector, providing greater flexibility in adding external hardware such as an Emergency Push Button.



Radius GM300 Series Mobile Two-Way Radio Specifications

General

	VHF			UHF					
Model Series:	M03GMC	M33GMC	M43GMC	M04GMC	M34GMC	M44GMC	M44GMC	M44GMC	M44GMC
Frequency Range:	146-174 MHz			438-470 MHz	438-470 MHz	403-433 MHz	438-470 MHz	465-495 MHz	490-520 MHz
RF Output:	MOW*	10-25W*	45W	MOW*	10-25W*	25/40W	25-40W*	25/40W	25/35W
Channel Capacity:	8 or 16								
Frequency Separation:	28MHz			32 MHz		30MHz	32 MHz	30MHZ	
Primary Input Voltage EIA: CEPT84:	13.8±10% 13.2±20%								
FCC Designation:	ABZ99FT3032	ABZ99FT3030	ABZ99FT3033	ABZ99FT4033	ABZ99FT4030	ABZ99FT4032	ABZ99FT4034	ABZ99FT4035	ABZ99FT4036
Typical Current Drain Rated Audio (7.5W):	1.5A								
Transmit:	4.0A	7.0A	15.0A	4.0A	7.5A	12.5A			
Standby:	400mA								
Squelch Capability:	Tone Coded, Digital Coded and/or Carrier Squelch								
Dimensions:	2" x 7" x 7.75" (50.8x178x198 mm)								
Weight:	61 oz.(1.7 kg)								

"Continuously variable power

Transmitter

	VHF		UHF	
Frequency Stability (-30°C to +60°C):	±.00025%			
Spurs/Harmonics 11029*. >mt. Exceptions:	-36dBm(.25nW) -13dBm(50µW) **(403-433 MHz)** / **-36** dBm *(35* **uW)**			
Audio Response: **(From** a 6 dB/Oct. Pre-Emphasis 300 to 3000 Hz, 2550 Hz @ 12.5 kHz)	+1 / -3 **dB**			
Audio Distortion: (@ 1000 Hz, 60% of Rated Max. Deviation)	**<3%E1A**			
FCC Modulation @ 20/25/30 kHz: @ 12.5 kHz:	16K0F1D.16K0F2D.16K0F3E **11K0F1D,11K0F2D,11K0F3E**			
Output Impedance:	50 **Ω**			
Modulation Sensitivity:	**80 mV for** 60% max. deviation at 1000 Hz			
Channel Spacing:	20/25/30 kHz	12.5 kHz	20/25/30 kHz	12.5 kHz
FM Noise EIA: **CEPT84:**	45 dB 55 dB	40 dB 50 dB	40 dB 50 **dB**	35 dB 45 **dB**

Military Standards 810 C, D & E

	810C		810D		810E	
Applicable MIL-STD:	Methods	Procedures	Methods	Procedures	Methods	Procedures
Low Pressure:	500.1	1	500.2	1	500.3	1
High Temperature:	501.1	1,2	501.2	1,2	501.3	1,2
Low Temperature:	502.1	1	502.2	1,2	502.3	1,2
Temperature Shock:	503.1	1	503.2	1	503.3	1
Solar Radiation:	505.1	1	505.2	1	505.3	1
Rain:	506.1	2	506.2	2	506.3	2
Humidity:	507.1	2	507.2	2	507.3	2
Salt Fog:	509.1	1	509.2	1	509.3	1
Dust	510.1	1	510.2	1	510.3	1
Vibration:	514.2	8,10	514.3	1	514.4	1
Shock:	516.2	1,3,5	516.3	1,5	516.4	1,5

Receiver

	VHF		UHF	
Channel Spacing:	12.5 kHz	20/25/30 kHz	12.5 kHz	20/25 kHz
Sensitivity EIA: 12 dB SINAD: CEPT84: 20 dB SINAD:	.35 µV .45 uV	.30 µV .40 µV	.35 µV ,45LIV	.30 µV .40 uV
Squelch:	10 dB SINAD			
Selectivity EIA: CEPT84:	-70 dB -70 dB	-80 dB -80 dB	-65 dB -65 dB	-75 dB -75 dB
IntnrmfflW?tinit* **EIA:** earM:	-70 **dB** -73 dB	-78 dB -73 dB	-65 dB -70 dB	-75 dB -70 dB
Frequency Stability: (-30°C to +60°C)	±.00025%			
Spur Rejection EIA: CEPT84:	-80 dB -75dB		-75 dB -70 dB	
Image Rejection **EIA: CEPT84***	-80 **dB** **-MdB**		-75dB -75 dB	
Audio Output: External Speaker (8Ω) **EIA** (@ < 5% Dist): CEPT84(@<10%Dist.): Internal Speaker:	7.5W 5.0W 3.0 W Nominal			
EIA Useable Bandwidth:	1.2 kHz	2.0 kHz	1.2 kHz	2.0 kHz
Input Impedance:	50 Ω			

*local mode provides an additional 10 dB protection against wHlnhind iMarference

Optional Signalling Features with RapMCall Package

Available in 16-Channel Models Only

Signalling Format: encode/decode	PTT ID	Call Alert	Voice SelCall	Emergency	Radio Check
MDC-1200:	X	X	X	X	X
Quik-Call II:		X	X		
DTMF:	X	X	X		
Star (encode only):	X			X	

WwIncludi-Sing let one Repeater Access & OTMF - ANI for Phone Access & Select V Signalling.

For further information contact:

MOTOROLA

In 1988 Motorola was a winner of the first Malcolm Baldrige National Quality Award.

National Quality Award

Specifications subject to change without notice.

© 199? MOTOROLA, INC. Printed in U.S.A.

® Motorola. Radius. Private Line. Digital Private Line. Quik-Call II, RapidCall, Call Alert. MDC-1200 and Touch-Code are trademarks of Motorola. Inc.

RI-GM300-01C

_____Received from NSC.DSCOTT 404/529-2105 08-09-93 08.02
-> GENSSUPVRSWEST NSC.WLWILSON
GENERALS - WESTERN REGION:
SUPERVISORS - WESTERN REGION:
FOR YOUR INFORMATION AND GUIDANCE. PLEASE HANDLE AS RANDY HAS REQUESTED.

THANKS, DLS 8/9/93

_____Received from NSC.ENREF 404/529-1254 08-09-93 07.33
-> NSC.DSCOTT DAVID L. SCOTT COMM
-> NSC.ELSWEENE E. L. SWEENEY COMM

ELS:
DLS:

A few radios have been ordered in 1993 that have replaced reasonably good radios due to the fact that the old radio did not have enough channels or a DTMF pad. These radios are to be brought to my attention so that I can get these radios into the hands of someone who can still use these radios on the job.

I still want to make sure all replaced radios are turned into a shop before the new radio is released. I will find a more suitable radio for retirement. Please inform all shops of this policy so I can get a valid inventory of good radios that have been replaced. I would like these radios shipped to Iranian Yard radio shop, please attach a note with each shipment so Mr. C. A. Wilson will know why this radio was shipped to him.

Thanks,
Randy E. Fults

-> NSC.WLWILSON	W. L. WILSON	COMM
-> NSC.WJSCHLAK	W J SCHLAKE	COMM
-> NSC.RSWARD	R. S. WARD	COMM
-> NSC.RMHOFFMA	R. M. HOFFMAN	COMM
-> NSC.RDMITCHE	R.D.MITCHELL	COMM
-> NSC.RAPERKIN	ROCKY A PERKINS	COMM
-> NSC.RAGALLOP	ROBERT A. GALLOP	COMM
-> NSC.PMHARE	PETER M HARE	COMM
-> NSC.PBGIBSON	P.B.GIBSON	COMM
-> NSC.JDROBERT	J D ROBERTS	COMM
-> NSC.HHSTANLE	HAROLD H STANLEY	COMM
-> NSC.DWBELL	DONALD W BELL	COMM
-> NSC.CMJOHNSO	CARL M. JOHNSON	COMM
-> NSC.SPHUFF	STEVEN P. HUFF	COMM
-> NSC.JKMURPHY	JAMES K. MURPHY	COMM
-> NSC.GEJOHNSO	GARY E.JOHNSON	COMM
-> NSC.GBKENDRI	GARY B. KENDRICK	COMM
-> NSC.DMMALOTT	DENNIS M MALOTT	COMM
-> NSC.DLHICKS	DENVER L. HICKS	COMM
-> NSC.AWDANIEL	A.W. DANIELSEN	COMM
-> NSC.JRCHASTA	J. RODNEY CHASTAIN	COMM
-> NSC.FCDAMRON	F.C. DAMRON	COMM
-> NSC.HSEKSIOG	EKSIOGLU, H. S.	C&S

THE WIRELESS JOURNAL

MOBILE *Radio*

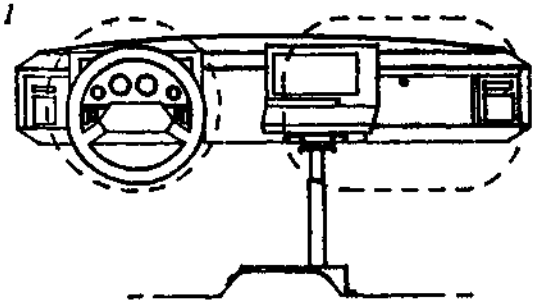
DUAL PASSENGER AIR BAGS ENFORCED FOR 1994.

Federal Motor Vehicle Safety Standard #208 requires that beginning with 1994 models, all passenger cars must have both driver and passenger side air bags. The space which these air bags occupy when iully deployed is known as the "air bag deployment zone". Since a deployed passenger side air bag extends left into the center area of the dash, the air bag deployment zone takes up most of the space now used for mounting mobile communications equipment

According to the new requirements, no equipment may be mounted within this zone since it might damage the air bag or keep it from functioning properly. Another concern is that a deploying air bag may loosen equipment and cause injury to the driver or passenger.

At this time, the acceptable mounting area includes the space between the seats in cars with bucket seats, and approximately ten inches above the transmission hump. The area above the transmission hump varies with different vehicles. Be sure to check your owner's manual before using this area. Fig. 1 illustrates how traditional placement of equipment falls within the restricted area. In Fig. 2, the equipment has been mounted outside the zone.

Figure 1



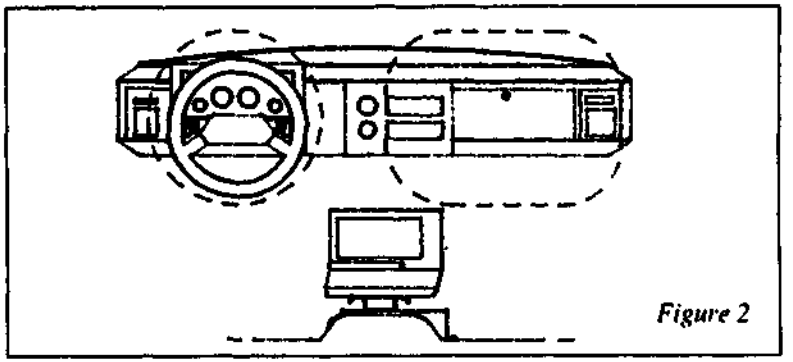


Figure 2

The dual air bag requirement presents a challenge to manufacturers, installers, and users alike. Some types of equipment will have to be redesigned or modified to comply, and users must adjust to a new layout of equipment.

TESSCO is ready to supply you with the equipment you need to fit within the acceptable zone. Watch for announcements of new products as they become available.

DLS:
ELS:

I saw this article and wanted to share this information with you. This is something we need to keep in mind during all radio installations.

ORIG - DLS
COPY - GEN. SUPVRS. COMM. WEST.
SUPVRS. COMM. WEST.
ASST. SUPVR. COMM.
AS INFO AND GUIDANCE.

Randy E. Fults
11-16-93
11/16/93

Received from NSC.DSCOTT 404/529-2105 09-28-94 13.07

-> ALLGENSSUPVRS	ALL GENERALS AND SUPERVISORS	
-> NSC.REFULTS	RANDY E FULTS	COMM

DLS, you have an "all" list. Please send this to "all", good info. Thanks RAP ROCKY A PERKINS COMM

You might pass this along to other shops in the area.

We have been seeing a large percentage of radios (HT600 & MT500) which are coming in the shop with reports of intermittant failure.

What we are seeing is cold solder joints on the antenna connector itself. This problem will be missed if you rely on the test set alone. It is a good bet that you will find quite a few of these radios with bad solder joints on the antenna if we look. I would recommend that, If it is already not being done, each of the new Motorola Radios be checked for this condition to avoid seeing it at a later time with the report that the radio is intermittant.

Gary Kendrick

-> NSC.WJSCHLAK	W J SCHLAKE	COMM
-> NSC.TLNESBIT	THOMAS L NESBIT	COMM
-> NSC.SLMARTIN	STEVEN L MARTIN	COMM
-> NSC.RWWILSON	ROBERT W WILSON	COMM
-> NSC.RSWARD	R S WARD	COMM
-> NSC.RMHOFFMA	R M HOFFMAN	COMM
-> NSC.RBSMITH	RANDALL B SMITH	COMM
-> NSC.RBHARRIS	RICHARD B HARRIS	COMM
-> NSC.RAPERKIN	ROCKY A PERKINS	COMM
-> NSC.RAGALLOP	ROBERT A GALLOP	COMM
-> NSC.PMHARE	PETER M HARE	COMM
-> NSC.PBGIBSON	P B GIBSON	COMM
-> NSC.MWCROSHA	M W CROSHAW	COMM
-> NSC.JJBRIGHI	JEFFREY J BRIGHI	COMM
-> NSC.JDROBERT	J D ROBERTS	COMM
-> NSC.HPGUESS	HAROLD P GUESS	COMM
-> NSC.GSSMITH	G STEPHEN SMITH	COMM
-> NSC.GBKENDRI	GARY B KENDRICK	COMM
-> NSC.ENLOWE	EDWARD N LOWE	COMM
-> NSC.ELSWEENE	E L SWEENEY	COMM
-> NSC.DWBELL	DONALD W BELL	COMM
-> NSC.DMTIMMER	DAVID M TIMMERMAN	COMM
-> NSC.DMMALOTT	DENNIS M MALOTT	COMM
-> NSC.DLHICKS	DENVER L HICKS	COMM
-> NSC.WMTALEND	WILLIAM M TALEND	COMM
-> NSC.CAWILSON	CHARLES A WILSON	COMM
-> NSC.CMJOHNSO	CARL M JOHNSON	COMM
-> NSC.SPHUFF	STEVEN P HUFF	COMM
-> NSC.AWDANIEL	A W DANIELSEN	COMM
-> NSC.WRHATCHE	W R HATCHELL	COMM
-> NSC.JRCHASTA	J RODNEY CHASTAIN	COMM
-> NSC.FDWATKIN	FRED D WATKINS	COMM
-> NSC.MRKIRK	M R KIRK	COMM
-> NSC.HSEKSIOG	H S EKSIOGLU	C&S
-> NSC.TLBERARD	TLBERARDUCCI	COMM
-> NSC.DRHAUER	D R HAUER	COMM

_____Received from NSC.DSCOTT 404/529-2105 10-28-94 12.48

-> ALLGENSSUPVRS	ALL GENERALS AND SUPERVISORS	
-> NSC.LKPRICE	L K PRICE	C&S
-> NSC.REFULTS	RANDY E FULTS	COMM

PLEASE SEE BELOW FOR COMMON DEFECT INFORMATION ON THE MOTOROLA MSR-2000 RADIO AND ASSOCIATED CORRECTIVE ACTION.

DLS 10/28/94

_____Received from NSC.DWBELL 219-493-5410 10-28-94 09.33

Bob Hoffman : Please forward to DLS/ELS for wide distribution. This problem will ultimately affect all MSR's. Thanks! D W Bell

-> NSC.PBGIBSON	P B GIBSON	COMM
-> NSC.DMMALOTT	DENNIS M MALOTT	COMM
-> NSC.GEJOHNSO	GARY E JOHNSON	COMM
-> NSC.DRHAUER	D R HAUER	COMM
-> NSC.RMHOFFMA	R M HOFFMAN	COMM

All: Mike Vawter at Ft Wayne has researched and found an inherent problem in the P.A.'s of high power MSR 2000 radios like are used on all A.R.N. stations. Units should be checked for this conditionand corrective action taken. Two ARN sites have been fixed, and I suspect Detroit and east Ringgold are exhibiting these symtoms.

SYMPTOMS: No power out. Low power out. Frying noise (sounds like data stream). Fluctuating power output.

CAUSE: Solder connection breaking from C502 power set capacitor.

CORRECTIVE ACTION: Resolder C502.

PROCEDURE: Locate C502 on 100 watt board of PA. Resolder both sides of C502. Removal of board is not necessary as C502 is accessible from top side.

-> NSC.WJSCHLAK	W J SCHLAKE	COMM
-> NSC.TLNESBIT	THOMAS L NESBIT	COMM
-> NSC.SLMARTIN	STEVEN L MARTIN	COMM
-> NSC.RWWILSON	ROBERT W WILSON	COMM
-> NSC.RSWARD	R S WARD	COMM
-> NSC.RMHOFFMA	R M HOFFMAN	COMM
-> NSC.RBSMITH	RANDALL B SMITH	COMM
-> NSC.RBHARRIS	RICHARD B HARRIS	COMM
-> NSC.RAPERKIN	ROCKY A PERKINS	COMM
-> NSC.RAGALLOP	ROBERT A GALLOP	COMM
-> NSC.PMHARE	PETER M HARE	COMM
-> NSC.PBGIBSON	P B GIBSON	COMM
-> NSC.MWCROSHA	M W CROSHAW	COMM
-> NSC.JJBRIGHI	JEFFREY J BRIGHI	COMM
-> NSC.JDROBERT	J D ROBERTS	COMM
-> NSC.HPGUESS	HAROLD P GUESS	COMt
-> NSC.GSSMITH	G STEPHEN SMITH	COMM
-> NSC.GBKENDRI	GARY B KENDRICK	COMM
-> NSC.ENLOWE	EDWARD N LOWE	COMM
-> NSC.ELSWEENE	E L SWEENEY	COMM
-> NSC.DWBELL	DONALD W BELL	COMM
-> NSC.DMTIMMER	DAVID M TIMMERMAN	COMM
-> NSC.DMMALOTT	DENNIS M MALOTT	COMM

_____Received from NSC.DSCOTT 404/529-2105 11-08-94 08.52
-> GENSSUPVRSWEST GENERALS AND SUPERVISORS WEST
REFERENCE BELOW. MAIL RANDY YOUR ORIGINAL PACKING SLIPS. MAKE A COPY FOR YOURSELVES, IF YOU WISH.

THANKS, DLS 11/8/94

DLS:
ELS:

I am finding out that material returned to Motorola on warranty is handled much faster if the original packing list is kept. Information about the order can be pulled from this packing list and will speed up the repair or replacement.

Would you inform all radio shops to mail or fax copies of each packing slip from radios received in the shops for a file I will keep. Therefore if any radios need to be returned I will have a copy of the original packing slip. Included on each packing slip please indicate the RRID assinged to the radios on the packing slip.

Thanks,
Randy

-> NSC.WJSCHLAK	W J SCHLAKE	COMM
-> NSC.RSWARD	R S WARD	COMM
-> NSC.RMHOFFMA	R M HOFFMAN	COMM
-> NSC.RAPERKIN	ROCKY A PERKINS	COMM
-> NSC.RAGALLOP	ROBERT A GALLOP	COMM
-> NSC.PMHARE	PETER M HARE	COMM
-> NSC.PBGIBSON	P B GIBSON	COMM
-> NSC.JDROBERT	J D ROBERTS	COMM
-> NSC.DWBELL	DONALD W BELL	COMM
-> NSC.CMJOHNSO	CARL M JOHNSON	COMM
-> NSC.SPHUFF	STEVEN P HUFF	COMM
-> NSC.GBKENDRI	GARY B KENDRICK	COMM
-> NSC.DMMALOTT	DENNIS M MALOTT	COMM
-> NSC.DLHICKS	DENVER L HICKS	COMM
-> NSC.AWDANIEL	A W DANIELSEN	COMM
-> NSC.JRCHASTA	J RODNEY CHASTAIN	COMM
-> NSC.WMTALEND	WILLIAM M TALEND	COMM
-> NSC.HSEKSIOG	H S EKSIOGLU	C&S
-> NSC.TLBERARD	TLBERARDUCCI	COMM
-> NSC.DRHAUER	D R HAUER	COMM
-> NSC.RLMITCHE	R L MITCHELL	C&S
-> NSC.GEJOHNSO	GARY E JOHNSON	COMM