

AUTOMATIC START AND CODED ANSWER-BACK CHECKING SYSTEM

AIR DEFENSE COMMAND, ALERT NO. 1 NETWORK (TELETYPE)

<u>CONTENTS</u>	<u>PAGE</u>
1. GENERAL.....	1
2. DESCRIPTION OF SYSTEM.....	1
3. OUTLYING STATION EQUIPMENT.....	2
4. CONTROL STATION EQUIPMENT.....	2
5. TERMINOLOGY.....	2
6. THEORY OF OPERATION.....	3
7. CONTROL STATION PRIORITY.....	4
8. MESSAGE FORMAT.....	4
9. MONITOR COPY.....	5
10. OUTLYING STATION TESTS.....	5
11. MASTER CONTROLLER TESTS.....	7
12. COMBINED CONTROLLER AND STATION TESTS.....	7
13. USE OF ALTERNATE CONTROLLER.....	7
14. DATE AND TIME SETTING.....	7

1. GENERAL

1.01 This section is issued to provide a description of the special teletypewriter system designed primarily for use on the Air Defense Command, Air Alert No. 1 Network, GT 9751.

1.02 This system is designed to provide an arrangement whereby a control station will automatically and continuously search for traffic from various outlying stations. Coded answer-back signals are received from each outlying station following its polling to serve as a circuit assurance feature.

2. DESCRIPTION OF SYSTEM

2.01 This system is designed to operate on 60 speed, half duplex teletypewriter circuitry employing up to and including 35 outlying stations with the capability of Sending, Receiving and Acknowledging alert messages. One primary master control station and one alternate master control station is provided.

2.02 The two control arrangements are installed at separate locations. The second, or alternate, control arrangement will be used during emergencies, maintenance,

and troubles relating to the primary control station. It is required, from an operational standpoint (equipment exercise), to switch control from one station to the other at regular periodic intervals.

2.03 One of the outlying stations is normally located at the primary master control station and one at the alternate master control station.

2.04 For location of the Primary Master Control Station, the Alternate Master Control Station, the Outlying Stations and Receive Only Stations assigned to this network, reference should be made to the current Circuit Layout Record Card.

2.05 This system is designed to provide an arrangement whereby a master control station will automatically and continuously search for traffic from the outlying stations. If no traffic is available, a coded answer-back signal will indicate that the outlying station is connected and in working order. These codes are not normally seen as printed material.

2.06 In the event that any station is not in working order when it is scanned by the master control station, a visual and audible alarm indication is actuated at the master control station. The visual alarm will indicate which particular station is concerned. This will enable the attendant to take necessary steps to have the station restored to service. The master control station will skip the station in trouble until the attendant, by operating a key, releases the visual alarm after being notified by the Telephone Company circuit control office that the trouble has been located and cleared.

2.07 If tape is available in the transmitter of an outlying station when that particular station is scanned by the master control station, this arrangement will automatically start the transmitter and the message will be sent out over the line to all receiving locations.

2.08 At the end of a message transmitted from any of the outlying stations, the control arrangement will automatically transmit the day of the month and the time of day in Z time.

2.09 After a message has been transmitted over this system, the control equipment will, after 30 seconds, begin a search to ascertain if the message was received at all of the outlying stations. This is known as the Acknowledge call and answer cycle. If the message has been received satisfactorily, the attendant at the outlying station will momentarily operate a non-locking push button key. Operation of this key must be completed within the 30 seconds that the red acknowledge lamp is on. When the acknowledge key is operated the red acknowledge lamp will be extinguished and the amber acknowledge guard lamp will be lighted. Following the manual operation of the acknowledge key, the outlying station, upon being searched by the master control station, will automatically send a three letter coded acknowledgement signal to the line. The first two acknowledge answer characters are different for each station. The third character of the acknowledge answer code being either a "Q" or an "X", depending upon whether the acknowledge key was operated or not operated at the outlying station. If the acknowledge key was operated and the amber acknowledge guard lamp was lighted a "Q" would be the third character to be printed in the acknowledge answer code. In the event that any station does not receive the message satisfactorily or the acknowledge key was not operated an "X" would be the third character printed in the acknowledge answer code. The acknowledgement code will be printed on the 28 KSR teletypewriter at all stations. The master control station attendant is required to check that each station has received the message by observing the codes at his receiving teletypewriter. As the acknowledge answer code is sent from each outlying station the amber guard lamp is extinguished automatically.

2.10 In the event that the master control station equipment is polling the outlying stations for message reception and a new alert tape is placed in the transmitter at an outlying station other than the outlying station associated with the master control station, the control equipment will complete the acknowledge call cycle then start an alert call cycle.

3. OUTLYING STATION EQUIPMENT

3.01 Each outlying station with the capability of sending, receiving, and acknowledging alerts is equipped with a 60 speed 14-W Transmitter-Distributor and a 28 KSR teletypewriter equipped with a stunt box. This equipment is mounted on an XRT-205 table.

3.02 Each outlying station is also equipped with special relay and selector equipment and power supply mounted in a standard seven foot cabinet.

3.03 Each outlying station with the capability to receive but not acknowledge alert messages is equipped with one 28 RO teletypewriter and a stunt box. These stations will receive only those transmissions containing the "U" or universal function included in the message format of the pre-punched tape.

4. MASTER CONTROL STATION EQUIPMENT

4.01 The master control station is equipped with a 28A Sequence Selector and a 28A Distributor. This equipment is mounted in the seven foot cabinet of the outlying station equipment that is associated with the control station. If an outlying station is not located at the master control station, a special arrangement will be provided to mount the 28A Sequence Selector and 28A Distributor.

4.02 The master control station is also equipped with a special relay and selector equipment and power supply mounted in a standard seven foot cabinet (in addition to that mentioned in Paragraph 3.02).

4.03 A separate lamp and key panel is provided in a table mounted slope front cabinet. The lamp and key panel is located on the Duty Officer's table in the Combat Operation Center at the control points.

5. TERMINOLOGY

5.01 Terminology peculiar to this system:

- (a) Alert Call - A two letter Code Directing Character (CDC) call sent by the control station to search for traffic from outlying stations and to ascertain if each outlying station is on the circuit and in working order. This Alert Call will start the transmitter at the outlying station if tape is available at that station.

- (b) Alert Answer - Two letter CDC Answers sent by outlying stations if there is no traffic at the stations and if station is on circuit and in working order.
- (c) Acknowledge Call - Two letter CDC Call sent by the control station to check if all outlying stations have received the last message sent on the circuit.
- (d) Acknowledge Answer - Three letter CDC Answer sent by the outlying stations.

6. THEORY OF OPERATION

6.01 When the power is turned on at the master control station, the master control station begins to continuously and automatically search for traffic from the outlying stations. Each outlying station is assigned a two-letter Alert Call Code. These codes are sent to the line through action of the control station equipment. When the Alert Call Code is received by the outlying station, it will automatically cause the 14-W Transmitter-Distributor to start if there is tape in the transmitter. The message would then be sent to the line. If there is no tape in the transmitter, the Alert Call will cause that particular outlying station to send back the Alert Answer Code that has been assigned to it. This Alert Answer will indicate to the master control station that the called station is on the circuit and in working order. The Alert Answer, when received at the master control station, causes the control equipment to advance and send the Alert Call to the next station.

6.02 If neither traffic nor Alert Answer Code is received from the outlying station, the master control station causes an alarm to be actuated and then continues its search of the next station. The alarm indicates to the attendant that a station is out of order. The audible alarm signifies that one of the stations did not respond, and the visual signal, by its position on the lamp and key panel, indicates the particular station that did not respond. The attendant at the master control station then operates the twist key associated with the visual signal that did not respond to the Alert Call Code. The master control station equipment then skips that station in its search and the lamp remains lighted until the master control station attendant restores the twist key to normal. It is recommended that the attendant operate the twist key when an alarm is received then restore the key to normal. This is to insure that the alarm indication was caused by trouble and not by a line hit. If the alarm is received on the next cycle of search, action should be taken to have service restored.

6.03 If, for any reason, such as maintenance work, it is desired to skip a station during a search, the attendant at the master control station should operate the twist key on the lamp and key panel associated with the station to be skipped, and the call codes for that station will not be sent to the line. The lamp on the control panel will be lighted to indicate that the station is being skipped.

6.04 At the end of a message, which is a combination of tape and keyboard transmission, the attendant at the sending station must send FIGS KL from his keyboard. These characters will cause the equipment at the control station to automatically send to the line the day of the month and the time of day that the message was sent.

6.05 After a message has been sent from any outlying station, the master control station will then begin to search to ascertain if all the outlying stations have received the message that was transmitted.

6.06 When a message is received at an outlying station, a visual and audible alarm is operated to alert the attendant. The audible alarm will consist of 5 rings of the bell that is associated with the upper case "S" mechanism of the 28 teletypewriter. The visual alarm is a red lamp mounted on the XRT-205 table. This lamp will become lighted and remain lighted for 30 seconds. During this interval, the attendant must operate a non-locking, push button key (Acknowledge Key), in order to condition relay and selector equipment so that it will return its Acknowledge Answer Code when its Acknowledge Call Code is received from the master control station.

6.07 Each outlying station is assigned a two-letter Acknowledge Call Code. These codes are sent to the line from the equipment at the master control station. The receipt of the station Acknowledge Call Code will cause the equipment at that particular station to automatically send back the Acknowledge Answer Code that has been assigned to it.

6.08 The control station searches for Acknowledge Answer Codes for one complete cycle, after which it automatically resumes its search for Alert messages.

6.09 The Acknowledge Answer Codes are printed on the 28 teletypewriters at each of the outlying stations so that the attendants can check to see that each station has received the message.

7. CONTROL STATION PRIORITY

7.01 The attendant at the master control station location has the capability to seize control of the network for the immediate transmission of alert messages from that station.

7.02 When the transmission of an alert message from the master control station is required the attendant will place the appropriate pre-punched tape in the tape-gate of the 14-W Transmitter-Distributor. This stops the Alert Call or Acknowledge Call cycle and conditions equipment so that the alert message will immediately be transmitted provided that there is no other message being transmitted from an Outlying Station. If a message is being transmitted from an Outlying Station the alert message from the control station location will not be transmitted until that message has been completed and the Outlying Station attendant types FIGS KL on the teletypewriter keyboard. Should the attendant at the Outlying

Station fail to type FIGS KL on the teletypewriter keyboard the equipment will, after a three second delay, automatically start the 14-W Transmitter-Distributor at the master control station which will transmit the alert message.

7.03 Message acknowledgments are accomplished as covered in Paragraph 2.09.

8. MESSAGE FORMAT

8.01 Alert messages transmitted over this network are contained in pre-punched tapes. Keyboard sending, except for an authenticating code word with each alert message, is not required. The network is not designed for the transmission of miscellaneous messages.

8.02 Messages sent by outlying stations must conform to the following format:

Pre-Punched Tape														Keyboard Sending			
LTRS	BLANK	BLANK	FIGS	H	LTRS	*	LTRS	CAR	LINE				10	CODE			
					U		RET	FEED	FIGS	SSSSS	TEXT	LTRS	WORK	FIGS	K	L	

* U is station cut on code to put all stations in "print" condition. Group codes F, B and X are also used to cut on certain groups of stations. Individual station codes may be used also. See Attachments 1 to 3, inclusive.

Characters included in the above example perform these functions:

CHARACTERS IN TAPE

- LTRS BLANK BLANK----- Locks out keyboards of 28 TTY's
- FIGS H LTRS----- Clears stunt box of codes operated while in select condition and puts TTY's in select - nonprint condition.
- U (or other code)----- Puts selected teletypes in the print condition. U is broadcast code. Group codes or individual station codes may be used.
- LTRS CAR RET LINE FEED--- Puts all teletypewriters and 28A sequence selectors in non-select condition.
- FIGS SSSSS----- Operates bell of upper case S mechanism on 28 TTY's to alert station attendants.
- TEXT----- Message
- 10 LTRS----- Punched in tape to retain sixth pin control until last character has passed sensing pins of transmitter.

CHARACTERS SENT FROM KEYBOARD

CODE WORD----- An authenticating word assigned by ADC to indicate a valid message.

FIGS K L----- Conditions outlying station equipment to send Acknowledge Answer Code and lights red lamp. It also conditions control station equipment to send time and date.

8.03 Group Connect Codes, Individual Connect Codes, Alert Call and Answer Codes and Acknowledge Call and Answer Codes are listed in Attachment 1. These are subject to change. Consult your current Circuit Layout Record Card when in doubt.

9. MONITOR COPY

9.01 Assuming no tape in the transmitter at any outlying station, one cycle of alert calls and answers would appear as follows:

Station 1	Station 2
FIGS H LTRS AEQF	FIGS H LTRS BEQG, etc.

for complete cycle of assigned stations.

FIGS H LTRS is sent before each Alert Call Code to clear the stunt boxes of previously sent codes and to put teletypewriters in the select-non-print condition.

In the above example, FIGS H LTRS AE is sent from the master controller. QF is the alert answer for station AE and is sent from the outlying station. Then FIGS H LTRS BE is sent from the master controller and the alert answer QG is sent from the second outlying station and so on.

9.02 One cycle of acknowledge calls and answers would appear on the monitor as follows:

FIGS H LTRS FE FIGS H LTRS U CAR RET LINE
FEED CSQ - (For Station 1)

FIGS H LTRS JE FIGS H LTRS U CAR RET LINE
FEED CAQ - (For Station 2), etc., until a complete cycle of assigned calls has been made.

In the above, FIGS H LTRS FE is sent from the master controller. FIGS H LTRS U CAR RET LINE FEED CSQ is sent from the outlying station. CSQ is the acknowledge answer code for the first station. The letter Q indicates that the attendant operated the Acknowledge Key within the 30 seconds that the red lamp was burning. If he had not done so the last letter would have been X. This requirement prevails for all stations.

9.03 The above examples reflect stations on the network as of January 1, 1960. Stations may be added or discontinued from time to time. Consult your current Circuit Layout Record Card to find out whether or not this is a true picture.

9.04 If an outlying station has tape in his transmitter, the monitor copy of the alert calls will appear as in 9.01 until the station with tape is reached. The, instead of an alert answer, a message in the format shown in 9.02 should appear on the copy followed by CAR RET LINE FEED FIGS DAY OF MONTH FIGS TIME OF DAY.

9.05 The day of the month will appear in numerals from 01 to 31. The time of day will appear in numerals from 0000 (Midnight) to 2359 (11:59 P.M.). The equipment at the master control station that sends the date and time is arranged to send CAR RET LINE FEED FIGS, Two numerals of date, FIGS, Four numerals of time. As the 28 type teletypewriters are arranged to space on FIGS, 5:30 P.M. of the 14th day of the month appears as:

14 1730

The same time and date on a 14 type tape TTY would read:

CAR RET LINE FEED FIGS 14 FIGS 1730

10. OUTLYING STATION TESTS

10.01 Before making any tests to outlying stations or on the overall circuit a release must be obtained. The control office of the circuit will obtain this release from the control station. Tests will be made only with the full cooperation and knowledge of the Control Station and Outlying Station concerned. Customer's "Alert" tape should not be used for tests because of the danger of accidentally transmitting it to the circuit.

10.02 Each outlying station having the capability of transmitting alert messages will be provided with a teletypewriter test tape marked "TELCO TEST". This test tape

contains a standard test sentence of 61 characters per line and is referred to as a service test message. The format shall be that specified in Paragraph 8.02 with minor exception as follows:

- (a) The "TEXT" portion shall be as many lines as desired of - THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 1234567890.
- (b) The authenticating code word is not required.
- (c) FIGS KL should be punched in the end of the tape followed by 10 LETTERS.

10.03 Bias Tolerance Test - Testroom to Station. Place the loop in a test terminal and using a 14 KSR transmit FIGS H LTRS U CAR RET LINE FEED and TEST SIGNALS. The maintenance man should make orientation range test and setting in accordance with BSP P30.002. After completion the testboard should transmit FIGS H LTRS using a 14 KSR.

10.04 Alert Call Code and Alert Answer Back Test. Check the maintenance man to make sure there is no tape in the transmitter. Determine the alert call code for the station under test and using a 14 KSR at the testroom, transmit FIGS H LTRS (ALERT CALL CODE). The outlying station should then transmit the Alert Answer Code. Check to see that the proper code is returned.

10.05 Alert Call Code and Alert Transmission Test. Instruct the maintenance man to place the "TELCO TEST" tape in the transmitter. Using a 14 KSR transmit FIGS H LTRS (ALERT CALL CODE) and observe to see that the station responds with the "TELCO TEST" message. Check transmission quality of message received.

10.06 Invalid Alert Call Code Test. Ask the maintenance man to verify that the transmitter-distributor does not have tape in the gate. Using a 14 KSR transmit all Alert Call Codes except the one for the station being tested. Check that no Alert Answer Code is received. Ask the maintenance man to place the "TELCO TEST" tape in the transmitter and repeat the performance. Observe to see that the message is not transmitted.

10.07 Acknowledge Call Answer Test

- (a) Request the maintenance man to place the "TELCO TEST" tape in the transmitter. Using a 14 KSR send the Alert Call Code for the station under test. This should cause

the station transmitter to start and transmit the test tape. When transmission of the test tape has been completed the station red acknowledge lamp should light and remain lighted for approximately 30 seconds. (Activated by FIGS KL in end of tape) Instruct the maintenance man to operate the Acknowledge Key during this 30 second period. When the key is operated, the red light should be extinguished and the Amber guard lamp should light.

- (b) Using a 14 KSR the testboard, after the 30 second pause, should transmit FIGS H LTRS (ACK CALL CODE FOR STATION UNDER TEST). Observe to see that the station responds with FIGS H LTRS U CAR RET LINE FEED (ACK ANS CODE FOR STATION UNDER TEST). The third character of the acknowledge answer should be "Q". At this time the amber guard lamp is extinguished.

- (c) Repeat the test procedure in (a) and (b) except that maintenance man should not operate the Acknowledge Key. In this case the third character of the Acknowledge Answer should be "X".

10.08 Connect Code Tests - Verify that the station is connected upon receipt of the proper code for that station and that it is not connected on invalid codes as follows:

- (a) Place the loop in a test terminal and using a 14 KSR transmit FIGS H LTRS (Station Connect Code) CAR RET LINE FEED and TEST SIGNALS. Have maintenance man observe that the station is connected and that the TEST SIGNALS are printed on the teletypewriter.

- (b) Repeat the procedure in (a) except using group connect codes valid for the station under test instead of the station connect code.

- (c) Repeat the procedure in (a) except using the broadcast connect code instead of the station connect code. Tests outlined in Paragraph 10.03 will also test this feature.

- (d) Repeat tests in (a) except using all station connect codes for other stations on the circuit excluding valid codes for the station under test. Observe that the teletypewriter does not connect or print the test signals.

- (e) Send FIGS H LTRS at conclusion of tests to put teletypewriter in select-non print condition.

11. MASTER CONTROLLER TESTS

11.01 Alert Call Cycle Tests Place master controller loop in test terminal with 14 KSR. Have the maintenance man turn on the power to the controller. The controller should begin to send Alert Call Codes. Observe monitor copy to see that the entire cycle is transmitted. The controller may start at some point midway in the Alert Call Cycle. If so, it should complete the cycle then send one complete cycle of Acknowledge Call codes and revert to Alert Call codes. Since there will be no Alert Answer codes received by the station, there will be a station alarm and a visual lamp will appear for each station searched. This also blocks out the call code for the station associated with the lamp so that on the next cycle there will be no Alert Call codes transmitted to the line. It will be necessary for the maintenance man to operate the twist key associated with each lamp to release the alarms and to unblock the transmitter.

11.02 Further tests on the controller require that a response from an outlying station be received at closely timed intervals which would be very difficult to accomplish using a testroom monitor. It is recommended that a release be obtained on the outlying station associated with the controller and that further tests be made as outlined in Paragraph 12.0.

12. COMBINED CONTROLLER AND OUTLYING STATION TESTS

12.01 Place controller, outlying station associated therewith and 14 KSR in local test circuit.

(a) Date and Time Test Place "TELCO TEST" tape in transmitter of outlying station. Start controller on Alert Call cycle. Tape will be transmitted on priority basis. Observe that Date and Time is transmitted from controller following FIGS KL in end of tape and that date and time are correct. Procedure for setting the clock is covered in Paragraph 14.0.

(b) Acknowledge Call Cycle Test Following (a) the controller should pause for approximately 30 seconds then start on Acknowledge Call cycle. Observe that the entire Acknowledge Call cycle is transmitted. Since there will be no response from stations other than at the control point, there will be a pause of approximately 3 seconds between transmission of codes.

(c) Check of Priority Feature Repeat (a) and (b). During the Acknowledge Call cycle, insert test tape in transmitter of outlying station equipment. Observe that test tape is transmitted immediately.

(d) Alternate Check of Priority Feature During the Alert Call cycle, following some Alert Call code, start sending test sentence from the testroom. While test sentence is being transmitted, insert "TELCO TEST" tape in outlying station transmitter. Remove test sentence and send FIGS KL from testroom monitor. Observe that the test message is immediately transmitted.

13. USE OF ALTERNATE MASTER CONTROLLER

13.01 Two master control arrangements are installed at separate locations to provide an alternate for use during emergencies, maintenance troubles, facility failures, etc. In order to exercise the alternate controller and be assured that it is in working order, the control shall be switched to the alternate at least one hour out of each day. The switch shall be made under the direction of the circuit control office.

14. DATE AND TIME SETTING

14.01 The date and time mechanism associated with the master controller must be reset at the end of each month or after the power has been interrupted. Keys and lamps located on the key and lamp panel at the control station have been provided for this purpose. Instructions for setting this mechanism are included in the Customer's Operating Instructions and in Maintenance Instructions. They are included here for information.

14.02 In order to reset the day of the month or time of day, Key K7 and the key associated with the numeral to be changed must be operated. The keys associated with the particular numerals of the date and time are as follows:

Key No.	Associated With	Example
K 1	1st numeral of date	21 1235
K 2	2nd numeral of date	21 1235
K 3	1st numeral of time	21 1235
K 4	2nd numeral of time	21 1235
K 5	3rd numeral of time	21 1235

Key No.	Associated With	Example
K 6	4th numeral of time	21 1235
K 7	This non-locking key, when operated, will prevent the timer mechanism from stepping the selectors. This key must be operated before the operation of Keys K1 to K6.	

For complete assurance that the desired date and time will be set up in the mechanism, the procedure as outlined below should be followed. To set the date-time group to 21 1235 representing the 21st day, 12th hour, 35th minute -

Hold Key K 7 operated and -

Operate Key K 6 until 0 lamp is lighted
 Operate Key K 5 until 0 lamp is lighted
 Operate Key K 4 until 0 lamp is lighted
 Operate Key K 3 until 0 lamp is lighted
 Operate Key K 2 until 0 lamp is lighted
 Operate Key K 1 until 0 lamp is lighted

Then with Key K 7 still held operated -

Operate Key K 6 until 5 lamp is lighted
 Operate Key K 5 until 3 lamp is lighted
 Operate Key K 4 until 2 lamp is lighted
 Operate Key K 3 until 1 lamp is lighted
 Operate Key K 2 until 1 lamp is lighted
 Operate Key K 1 until 2 lamp is lighted

Release Key K 7.

Note: The time should be set ahead to allow for the length of the interval required to complete the required operations. Experience will indicate how much lead time must be allowed depending upon the skill of the operator.

Attached:
 Attachments 1 to 5, inclusive

GROUP CONNECT CODES

GROUP 1 (FIGS F LTRS)

1. CNR - Central NORAD Region, Richard-Gebaur AFB, Grandview, Mo.
2. 20NAD - Richards-Gebaur AFB, Grandview, Mo.
3. 29NAD - Great Falls, Mont.
4. 34NAD - Kirtland AFB, Albuquerque, N. M.
5. CINCNORAD - North American Air Defense Command Ent AFB, Colorado Springs, Colorado
6. 33NAD Oklahoma City AFS, Oklahoma City, Oklahoma

GROUP CONNECT CODES

GROUP 2 (FIGS B LTRS)

1. WNR - Western NORAD Region, Hamilton AFB, Ignacio, Calif.
2. 28NAD - Hamilton AFB, Ignacio, California
3. 25NAD - McChord Field, Tacoma, Wash.
4. 27NAD - North AFB, San Bernardino, Calif.
5. CINCNORAD - North American Air Defense Command, Ent AFB, Colorado Springs, Colorado

GROUP CONNECT CODES

GROUP 3 (FIGS X LTRS)

1. CINCNORAD - North American Air Defense Command,
Ent AFB, Colorado Springs, Colorado
2. WNR - Western NORAD Region, Hamilton AFB,
Ignacio, Calif.
3. CNR - Central NORAD Region, Richards-Gebaur AFB,
Grandview, Mo.
4. Northern NORAD Region St. Huberts, Quebec, Canada
5. 26NR - Hancock Field, Syracuse, N. Y.
6. 30NR - Truax Field, Madison, Wisc.
7. 32NAD - Dobbins AFB, Marietta, Ga.
8. ANR - Alaskan NORAD Region, Elmendorf AFB,
Anchorage, Alaska
9. 64NAD - Pepperell AFB, St. Johns, Newfoundland

INDIVIDUAL CONNECT CODES

	<u>Connect Code</u>
1. CINCNORAD - North American Air Defense Command, Ent AFB Colorado Springs, Colorado	CS LTRS
2. CNR - Central NORAD Region Richards-Gebaur AFB, Grandview, Mo.	CA LTRS
3. 34NAD - Kirtland AFB, Albuquerque, N. M.	AB LTRS
4. HEDUSAF - Pentagon, Arlington, Va.	DC LTRS
5. 20NAD - Richards-Gebaur AFB, Grandview, Mo.	KC LTRS
6. 29NAD - Great Falls, Mont.	GF LTRS
7. WNR - Western NORAD Region Hamilton AFB, Ignacio, Calif.	WA LTRS
8. 28NAD - Hamilton AFB, Ignacio, Calif.	IG LTRS
9. 30NR - Truax Field, Madison, Wisc.	MA LTRS
10. 32NAD - Dobbins AFB, Marietta, Ga.	MR LTRS
11. 33NAD - Tinker AFB, Oklahoma City AFS, Oklahoma City, Okla.	MW LTRS
12. Maxwell AFB, Hdqtrs., Air University, Montgomery, Ala.	MY LTRS
13. CINCLANFLT - Norfolk N.A.S., Norfolk, Va.	NO LTRS
14. SAC Hdqtrs., Offutt AFB, Omaha, Nebraska	OM LTRS
15. NNR - Northern NORAD Region, St. Huberts, Quebec, Canada	ML LTRS
16. NAD - Norton AFB, San Bernardino, Calif.	SB LTRS
17. RCAF - Hdqtrs. RCAF, Ottawa, Ontario, Canada	OW LTRS
18. 26NR - Syracuse AFS, Syracuse, N. Y.	SY LTRS
19. 25NAD - McChord Field, Tacoma, Wash.	TA LTRS
20. Blue Ridge Summit, Pa.	BR LTRS
21. 64NAD - Pepperell AFB, St. Johns, Newfoundland	NF LTRS
22. ANR - Alaskan NORAD Region, Elmendorf AFB, Anchorage, Alaska	AL LTRS

CODES ASSIGNED FOR ALERT NO. 1 NETWORK

OUTLYING STATIONS

<u>STATION</u>	<u>ALERT TAPE CODES</u>	<u>ALERT CALL</u>	<u>ALERT ANS.</u>	<u>ACK. CALL</u>	<u>ACK. ANS.</u>
1. North American Air Defense Command, Ent AFB, Colorado Springs, Colorado	CINC-NORAD	AE	QF	FE	CSQ
2. CNR Central NORAD Region, Richards-Gebaur AFB, Grandview, Mo.	CFCCR	BE	QG	JE	CAQ
3. Kirtland AFB, Albuquerque, N. M.	34AD	CE	QI	LE	ABQ
4. Pentagon, Arlington, Va.	HEDUASF	DE	QJ	PE	DCQ
5. Not Assigned		AF	QY	FX	YPQ
6. Not Assigned		BF	QE	JX	
7. Not Assigned		CF	RE	LX	
8. Richards-Gebaur AFB, Grandview, Missouri	20AD	DF	RG	PX	KCQ
9. Great Falls, Mont.	29AD	AG	RF	FG	GFQ
10. WNR Western NORAD Region, Hamilton AFB, Ignacio, California	CFWCR	BG	RI	JG	WAQ
11. Hamilton AFB, Ignacio, Calif.	28AD	CG	RJ	LG	IGQ
12. Truax Fld., Madison, Wisc.	30AD Det.1	DG	RY	PG	MAQ
13. Dobbins AFB, Marietta, Ga.	32AD	AI	SE	FI	MRQ
14. Oklahoma City AFS, Oklahoma City, Oklahoma	33AD	BI	SF	JI	MWQ
15. Not assigned					
16. Maxwell AFB, Hdqtrs., Air University, Montgomery, Ala.		DI	SJ	PI	MYQ
17. Never Used		AJ	SI	FQ	
18. CINCLANFLT Norfolk N.A.S., Norfolk, Va.	*	BJ	SY	JQ	NOQ
19. SAC Hdqtrs., Offutt AFB	*	CJ	KF	LQ	OMQ
20. Not Assigned		DJ	KG	PQ	
21. NNR Hdqtrs., St. Huberts, Quebec, Canada	RCAF-ADC	AY	KI	FY	MIQ
22. Norton AFB, San Bernardino, California	27AD	BY	KF	JY	SBQ
23. Hdqtrs., RCAF, Ottawa, Ontario, Canada	RCAF	CY	WE	LY	OWQ
24. Syracuse AFS, Syracuse, N. Y.	26AD	DY	KE	PY	SYQ
25. McChord Fld., Tacoma, Wash.	25AD	AZ	KY	FZ	TAQ

<u>STATION</u>	<u>ALERT TAPE CODES</u>	<u>ALERT CALL</u>	<u>ALERT ANS.</u>	<u>ACK. CALL</u>	<u>ACK. ANS.</u>
26. Hdqtrs. RCAF, Vancouver, B.C., Canada	5AD	BZ	WF	JZ	BCQ
27. Blue Ridge Summit, Pa.	*	CZ	WG	LZ	BRQ
28. Pepperell AFB, St. Johns, Newfoundland	64AD	DZ	WI	PZ	NFQ
29. Elmendorf AFB, Anchorage, Alaska	AAC	AN	WJ	FN	ALQ
30. Not Assigned		BN	WY	JN	
31. Not Assigned		CN	XE	LN	
32. Not Assigned		DN	XF	PN	
33. Not Assigned		AP	XG	FR	
34. Not Assigned		BP	XI	JR	
35. Not Assigned		CP	XJ	LR	

(*) Do not originate alerts

CONTROL STATIONS

1. North American Air Defense Command, Ent AFB, Colorado Springs, Colo.
2. CNR Central NORAD Region, Richards-Gebaur AFB, Grandview, Mo.

RECEIVE ONLY STATIONS

TAC Hdqtrs., Langley AFB, Hampton, Va.

Blue Ridge Summit, Pa. (Two Stations)

Sandia AFB, Albuquerque, N. M.

Air Defense Sector - New York

Air Defense Sector - Bangor

Air Defense Sector - Boston

Air Defense Sector - Washington