APPENDIX C

NETWORK ACCESS CONTROL ALGORITHM

C.1 General.

C.2 Applicable documents.

C.3 Network timing model.

C.3.1 Network timing model definitions.

C.3.2 Network timing model parameters.

The parameters of the network timing model are general enough to model interactions with a wide variety of DCEs. All parameters are specified at the DTE to DCE interface and are in units of ~~millisecond~~ seconds with a resolution of one millisecond. Parameters may have a value of zero if they are not applicable to the DCE being used. Network timing model parameters are shown in Figure 32.

C.3.2.1 Equipment preamble time (EPRE).

EPRE is the time from when the DTE initiates a transmission, often by asserting Push-to-Talk (PTT), until the transmitting DTE sends to its DCE the first bit of information that will be delivered to the receiving DTE. EPRE is a characteristic of the DCE. It accounts for DCE start up time, including time required for radio power up and transmission of COMSEC and other DCE preambles. EPRE can have a value between ~~0 and 30,000 millisecond~~ 0.000 and 30.000 seconds.

C.3.2.2 Phasing transmission time (PHASING).

PHASING is the time the DTE shall send an alternating sequence of one and zero bits after the completion of EPRE and prior to sending the first bit of DATA. PHASING can be needed due to characteristics of the DCE, DTE, or both. PHASING can have a value between ~~0 and 10,000 millisecond~~ 0.000 and 10.000 seconds. The DTE shall use the DCE bit rate to compute the number of PHASING bits to transmit.

C.3.2.3 Data transmission time (DATA).

C.3.2.4 Coupled acknowledgment transmission time (S).

C.3.2.5 Equipment lag time (ELAG).

C.3.2.6 Turnaround time (TURN).

C.3.2.7

C.3.2.8 DTE processing time (DTEPROC).

C.3.2.9 DTE turnaround time (DTETURN).
DTETURN is the time required for the DTE or modem to stop listening for received data or squelch detect and to activate the radio's PTT. DTETURN (designated as the operational DTETURN [op_DTETURN]) shall be a variable parameter where the range shall be from the modem's minimum op_DTETURN 0.000 to 0.100 millisecond seconds in one- (1) millisecond resolution steps. Varying the DTETURN parameter could allow different modems on the same radio net to match their network access delay slots.

C.3.2.10 Tolerance time (TOL).

C.4 Network access control.

C.4.1 Network busy sensing function.

C.4.1.1 Data network busy sensing.
When receiving a data transmission, network busy shall be detected within a fixed time. Parameter B shall be used to compute this fixed time. For synchronous mode B shall be less than or equal to (32/n) seconds. For asynchronous mode B shall be less than or equal to (64/n) seconds. For packet mode B shall be less than or equal to 0.250 millisecond seconds. Upon detection of data network busy, the data link network busy indicator shall be set. Setting the data link network busy indicator shall inhibit all message transmissions, including coupled response messages. The data link network busy indicator shall be reset upon indication from the physical layer that neither voice nor digital data is being detected by the station.

C.4.1.2 Voice network busy sensing.

C.4.1.3 Network busy detect time.

C.4.2 Response hold delay.

C.4.3 Timeout period.

C.4.4 Network access delay.

C.4.5 Voice/data network sharing.
A station may support this protocol on a network where both voice and data transmissions are allowed to occur. When operating in a mixed voice and data network, voice and data network sharing shall operate in the following manner:

a. A receive operation shall be considered a voice reception unless a valid synchronization pattern is identified. A receive operation that is less than 0.75 seconds in length shall be considered a noise burst instead of a voice reception. See Section 6, Notes, (6.3.2.2.2) for additional information.

b. The network shall be synchronized based on RHD and TP timers, which are driven only by data transmissions and receptions. Voice receptions and noise bursts shall not be used for resynchronizing network timers.

c. A station shall not transmit during a noise burst or a voice reception. After completion of a voice reception, a station shall wait at least TURN ~~millisecond~~ seconds before initiating transmission. When voice/noise reception begins and ends during a Type 1 acknowledgment sequence, an acknowledging station will begin transmission only at the beginning of its individual RHD and will not begin transmission after the start of its RHD period.

d. After completion of a voice reception, operation of the P-NAD network access scheme shall be reinitiated if P-NAD is being used. P-NAD consists of a sequence of NAD slot groups. Within each NAD slot group there is one NAD slot assigned to each station and one slot assigned to the station that transmitted last. After a voice reception is completed, the current, partially-completed NAD slot group and the next complete NAD slot group shall be used only by stations with urgent-precedence data transmissions. The NAD slot group after these groups shall be used only by stations with urgent-precedence or priority-precedence data transmissions. Subsequent NAD slot groups may be used by any station. This preserves the intent of P-NAD, which is to deterministically avoid collisions and to ensure that high-precedence traffic is always transmitted first.