CHAPTER 17
Aircraft Material Condition Readiness

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17.1 Subsystem Capability and Impact Reporting (SCIR)

17.1.1 System Rules and Specifications

Several methods can be used to process SCIR data to produce SCIR-3, SCIR-4, SCIR-5-1, SCIR-5-2, and SCIR-5-3 reports. However, the method selected must be capable of complying with the fundamental philosophy of the SCIR concept which is the recreation, within the computer, of the real life situation which an activity experienced during the month being processed. This chapter describes but one method by which SCIR data may be processed to achieve the objective of SCIR. It is divided into four sections: (1) Construction of the Data Matrix, (2) Summarization and Weighing, (3) Output Products, and (4) Processing Rules.

17.1.2 Construction of the Data Matrix

17.1.2.1 Construction of Data Bins. To recreate the situation which existed within the activity for a given month, all maintenance actions which were SCIR related, such as, had valid EOC codes assigned, are loaded by BU/SERNO into data bins. An example of six bins for a reporting month follows:

BIN-1				BIN-2				BIN-3				BIN-4				BIN-5				BIN-6			
M	S	U	S	M	S	U	S	M	S	U	S	M	S	U	S	M	S	U	S	M	S	U	S
I	U	N	C	I	U	N	C	I	U	N	C	I	U	N	C	I	U	N	C	I	U	N	C
S	P	S	H	S	P	S	H	S	P	S	H	S	P	S	H	S	P	S	H	S	P	S	H

One one-half hour bin is required for each half hour of the month (1488 bins for a 31 day month, 1440 bins for a 30 day month, 1392 bins for a 29 day month, and 1344 bins for a 28 day month). The bins should be numbered 1 - 1488 for a 31 day month. Each bin must provide for loading of four characters as described in the following paragraphs.

17.1.2.1.1 Mission Code - The first position of an EOC code.

17.1.2.1.2 Supply Count - Identified by a S in the Job Status Block.

17.1.2.1.3 Unscheduled Maintenance Count - Identified by a valid EOC code and meets one of the following:

  a. 1st position of EOC code is in the range of C-H, J-L, or W-Y.

  b. 1st position of EOC code is Z and 2nd and 3rd positions are numeric and in the range of 11-99.

  c. 1st position of EOC code is Z and 2nd and 3rd positions are 03 and TM is E or S.

17.1.2.1.4 Scheduled Maintenance Count - Identified by a valid EOC code when the first position of EOC code is Z and meets one of the following:

  a. 2nd and 3rd position of EOC code is 04.

  b. 2nd and 3rd position of EOC code is 03 and TM is not E or S.

17.1.2.2 Sequence of SCIR Data. To properly load data bins, sequencing of data is of primary importance. Criteria for proper sequencing follows.

17.1.2.2.1 Extraction of Inventory Transactions. All inventory transactions (VIDS/MAF Copy 1 TRCODEs 00, 02, 03, and master records) within BU/SERNO have to be selected and arranged by date/time (Blocks B30-B34). Inventory Code must be valid (A or in range 1-8) and first position of TEC must be A, K, or N.

17.1.2.2.2 Extraction of SCIR data. The technique and rules used to extract SCIR data are:

a. Record selection criteria for generation of SCIR reports are:

(1) VIDS/MAF Copy 1 TRCODE must equal 11, 12, 14, 15, 16, 17, 18, 19, 21, 23, 24, 25, 41, 47, or 72. OOMA includes TRCODE 20.

(2) NAVFLIRS Record Type 7B records are selected for SCIR-3 processing when FLTHRS and TOTFLTS are valid (according to VALSPECS).

b. The entire VIDS/MAF Copy 1 will not be selected for SCIR purposes with an error (according to VAL SPECs) in any of the repair cycle (Blocks B08-B34) or maintenance/supply records (Blocks B53-D17); additionally, VIDS/MAF Copy 1 will not be selected for the SCIR-5-1 or SCIR-5-2 if errors are found in AWM (Blocks B38-B49) or EMT (Block A45).

c. Events. An event is a line of coding from the repair cycle and maintenance/supply record of the VIDS/MAF Copy 1 consisting of job status, date, time, and EOC code. A SCIR related event is an event with a valid EOC code documented. A valid EOC code is one where the first position is in the range of C-H, J-L, or W-Y.

d. Gripe Life (GL). Gripe Life is the period of time between date/time received (Blocks B08, B12) and date/time completed (Blocks B30, B34). SCIR Gripe Life (GLs), however, is the accumulation of time for only those SCIR related events within total GL.

e. SCIR Sequence. SCIR data must be examined within the proper sequence of events. The proper sequence being received (Block B16), in work (Block B27), 1st through 8th events (Blocks B62-D17), and completed (Blocks B30/B34).

f. SCIR Event Eligibility. Only SCIR related events will be considered for extracting data when loading the data bins. The following criteria are used for determining SCIR related eligibility:

(1) If more than one SCIR related event is found to have equal date and time, only the last event of a group of equals will be considered eligible for loading into the data base.

(2) While examining events in the sequence specified above, if the completed date is reached prior to finding a valid EOC code, SCIR data will not be extracted for that VIDS/MAF Copy 1.

(3) If any event is 14 minutes or less, the event will be ignored.

(4) If job status is S and the event is one hour or less in length, assume job status to be M for SCIR purposes.

g. Event Begin Date and Time. The beginning of a SCIR related event will be the actual documented date and time.

h. Event End Date and Time. The ending of a SCIR related event is the actual documented date and time of the following event (regardless of its SCIR relationship).

17.1.2.3 Loading the Data Bins. The first step in loading the data bins is to identify the proper bin for storage of the applicable data elements. The following shows one method to accomplish proper bin selection. Other methods may prove to be more effective.

17.1.2.3.1 Calculating Bin Numbers. A begin bin number and an end bin number must be calculated to represent the job status from beginning to end. The EOC code will be maintained for each period to be used to define entries into the 1488 bin table. The period of a job status is from one job status with the hours not zero, to the next job status date/time or completion date/time. Prior to calculating the bin number, the dates should be converted to a Gregorian date (YYMMDD). The time is already in hours and minutes (HHMM).

17.1.2.3.1.1 Convert the beginning date/time of each job status period to minutes and divide by 30 minutes to result with the begin bin number as follows: (convert to whole number by dropping decimal portion of result).

$$\underline{\text{BEGIN BIN NUMBER}} = \underline{\text{BEGIN MINUTES}} = \underline{\text{(DD-1) 1440 + 60HH + MM}}$$
$$\qquad\qquad\qquad 30 \qquad\qquad\qquad\qquad 30$$

DD - DD portion of Gregorian date
HH - HH portion of TIME
MM - MM portion of TIME

17.1.2.3.1.2 Convert the ending date/time of the job status period to minutes (do not divide by 30) using the same formula used in finding the minutes to calculate begin bin number. The result is end minutes as a whole number.

17.1.2.3.1.3 Subtract the begin minutes obtained in computing the begin bin from the end minutes. Divide this result by 30 minutes which is the number of bins in the job status period. Carry the quotient result to one decimal and round to a whole number.

17.1.2.3.1.4 If the number of bins in the job status period is zero, do not process this interval; otherwise, add it to the begin bin to get the end bin. After computing the end bin add one to the begin bin before proceeding.

17.1.2.3.2 Code Preference. When loading data bins with inventory/SCIR related event data, the following criteria will be used in determining order of precedence for "miss" code selection:

a. Inventory Codes A and 1-9 have equal value and will replace each other.

b. EOC RC-Z have priority in ascending order; for example, Z replaces Y, Y replaces X, X replaces W.

c. Any EOC code will replace an Inventory Code of A but cannot replace 1-9.

17.1.2.3.3 Loading Master Records. The first data to be loaded into the data bins will be from the master record for the accounting period being processed. The Inventory Code of the master record will be loaded into the "miss" portion of each data bin.

17.1.2.3.4 Loading Inventory Transactions. After selection and sequencing of all inventory transactions has been accomplished and only after the master record has been loaded, inventory transactions may be loaded. Inventory transactions must be loaded, starting with the first date/time and ending with the last date/time. By applying the data from the completed date/time to the formula, the bin number for the inventory transaction can be identified. For the purpose of the formula, completed date/time will be considered begin date/time. Load the Inventory Code into the "miss" portion of the bin calculated, and all subsequent bins for the accounting period. This procedure will be repeated for each inventory transaction submitted during the accounting period.

NOTE: If the TRCODE is 03, load Inventory Code 9 regardless of the code documented on the inventory transaction.

17.1.2.3.5 Loading SCIR Related Events. Only after the inventory data has been loaded can the loading of SCIR related events be considered. Applying one SCIR related event at a time the bins can be loaded by the following criteria:

a.   First determine which data bins should be loaded. This is accomplished by applying the event begin date/time and the event end date/time to the formula. This will give the beginning and ending bin numbers to be loaded. All other bins which fall within that range will be loaded.

b.   Secondly determine, bin by bin, if data is to be loaded. This is accomplished by applying the EOC code to the precedence criteria:

(1)   If the "miss" portion of the data bin already contains a numeric inventory code, that bin will not be loaded.

(2)   If the "miss" portion of the data bin already contains an inventory code of A, the event EOC code replaces the A.

(3)   If the "miss" portion of the data bin already contains an EOC code of greater value, than the event being considered, the event will be ignored for that bin.

(4)   If the "miss" portion of the data bin already contains an EOC code of lesser value than the event being considered, the event EOC code will replace the code already present. All SUP, UNS, and SCH counts will be cleared and depending on job status and last two positions of the EOC code, a count of 1 will be added to the SUP, UNS, or SCH counts as applicable.

(5)   If the "miss" portion of the data bin already contains an EOC code of equal value to the event being considered, the "miss" portion of the bin will remain the same. A 1 however, will be added to the SUP, UNS, or SCH counts based on the criteria. When the SUP, UNS, or SCH reaches 9 no further addition is required unless the "miss" changes and the previous counts are cleared.

c.   The following paragraph shows an example of how the data bins are loaded.

17.1.3 Summarization and Weighing

17.1.3.1 General. Once all SCIR related records have been validated they must be read into the data bins constructed in paragraph 17.1.2. Figures 17-1 and 17-2 illustrate the technique used and the loading of each half hour data bin using five maintenance records and one inventory transaction. Figures 17-1 indicates records sequenced and arrayed chronologically by Julian date. Figure 17-2 indicates a line-by-line accumulation of each half hour bin from Figures 17-1. The following questions can therefore be answered:

a.   What was the total number of hours each BU/SERNO was AWM, by reason code, during the month?

b.   What was the total number of discrepancy hours that each equipment was not available and was the reason maintenance or supply?

c.   What was the highest mission/function availability of the equipment during the month?

17.1.3.2 Summarizing and Weighing the Bins. The following paragraphs explain the bin technique used to identify the specific capability the equipment was capable of, during each half hour of the month being processed. Figures 17-1 and 17-2 are examples of this technique.

17.1.3.2.1 Bin 1. The loading of bin 1, per Figures 17-1 and 17-2, is described below:

a.   Line 1 - Figures 17-1, first record, first event, displays an EOC code of B15 and job status of M. Since this is the first event of the first record, bin 1 will contain Mission Code A with a count of one for unscheduled maintenance. The result is shown in Figure 17-2, line 1, bin 1.

b.   Line 2 - Figures 17-1, second record, first event, displays an EOC code of B14 and job status of M. Since the Mission Code in bin 1 is already A, this event will not replace it. However, the numeric positions and the job status of the EOC code must be considered. Since the EOC code does not meet the criteria for scheduled maintenance and the job status is M, this event will cause the accumulation of two for unscheduled maintenance in the bin. The result is shown in Figure 17-2, line 2, bin 1.

c.   Line 3 - Figures 17-1, third record, first event, will be considered for bin 1. The result is shown in Figure 17-2, line 3, bin 1.

d.   Total Line - Since no further records/events are to be considered, the final accumulated result of bin 1 is shown in Figure 17-2, total line.

17.1.3.2.2 Bin 2. The loading of bin 2, per Figures 17-1 and 17-2, is described below:

a.   Line 1 - Figures 17-1, first record, second event, displays an EOC code of B15 and job status of M. Since this is the first event to be loaded into bin 2, the bin will contain Mission Code A with a count of one for unscheduled maintenance. The result is shown in Figure 17-2, line 1, bin 2.

b.   Line 2 - Figures 17-1, second record, second event, displays an EOC code of Z97 and job status of M. Since bin 2 contains a Mission Code, entered as a result of a prior event, Mission Code Z must be compared with the Mission Code previously loaded in bin 2. Therefore, Mission Code Z, being more degrading than Mission Code A, will replace Mission Code A and all related counts for supply, unscheduled/scheduled maintenance contained in the bin. Bin 2 will now be loaded with EOC code Z97 and job status of M. Once loaded, the bin will contain a Mission Code Z with a count of one for unscheduled maintenance. The result is shown in Figure 17-2, line 2, bin 2.

c.   Line 3 - Figures 17-1, third record, second event, displays an EOC code of B17 and job status of M. Upon comparing Mission Code A with the Mission Code previously loaded in bin 2, it is noted that this event is not more degrading, therefore ignored. The result is shown in Figure 17-2, line 3, bin 2.

d.   Total Line - Since no further records/events are to be considered, the final accumulated result of bin 2 is shown in Figure 17-2, total line.

17.1.3.2.3 Bin 3. The loading of bin 3, per Figures 17-1 and 17-2, is described below:

a.   Line 1 - Figure 17-1, first record, third event, displays an EOC code of B15 and job status of M. Since this is the first event to be loaded into bin 3, the bin will contain Mission Code A with a count of one for unscheduled maintenance. The result is shown in Figure 17-2, line 1, bin 3.

b.   Line 2 - Figure 17-1, second record, third event, displays an EOC code of Z97 and a job status of S. Since bin 3 contains a Mission Code, entered as a result of a prior event, Mission Code Z must be compared with the Mission Code previously loaded in bin 3. Therefore, Mission Code Z, being more degrading than Mission Code A, will replace Mission Code A and all related counts for supply, unscheduled/scheduled maintenance contained in the bin. Bin 3 will now be loaded with EOC code of Z97 and job status of S. Once loaded, the bin will contain a Mission Code Z with a count of one for supply. The result is shown in Figure 17-2, line 2, bin 3.

c.   Line 3 - Figure 17-1, third record, third event, displays an EOC code of B17 and job status of S. Upon comparing Mission Code A with the Mission Code previously loaded in bin 3, it is noted that this event is not more degrading, therefore ignored. The result is shown in Figure 17-2, line 3, bin 3.

d.   Line 4 - Figure 17-1, fourth record, first event, displays an EOC code of Z03, TM of G and job status of M. Since the Mission Code in bin 3 is already Z, this event will not replace it. However, the numeric positions and job status of the EOC code must be considered. Since the EOC code meets the criteria for scheduled maintenance and the job status is M, a count of one for scheduled maintenance must be added to the bin. The result is shown in Figure 17-2, line 4, bin 3.

e.   Line 5 - Figure 17-1, fifth record, first event, displays an EOC code of D41 and job status of M. Upon comparing Mission Code D with the Mission Code previously loaded in bin 3, it is noted that this event is not more degrading, therefore ignored. The result is shown in Figure 17-2, line 5, bin 3.

f.   Total line - since no further records/events are to be considered, the final accumulated result of bin 3 is shown in Figure 17-2, total line.

17.3.2.4 The remaining bins, in Figures 17-1 and 17-2, will be loaded using the same logic as described above. Bin 7 will be loaded with the Inventory Transaction Status Code 3 for the remainder of the month or until an inventory transaction replaces it. The result of applying an Inventory Transaction Code is shown in Figure 17-2, total line, bin 7.

NOTE: **For illustration purposes, the inventory transaction was shown last. When actually loading the data bins, all inventory transactions are applied first.**

17.1.4 Output Products

General. The SCIR output products are designed for local level managers and are to be prepared at the end of each month. Some of the data required to produce these reports will be summarized for the generation of 79 records.

17.1.4.1 Calculating Equipment Discrepancy and Utilization for the SCIR-3

17.1.4.1.1 This report is designed to reflect, by BU/SERNO, the total number of discrepancy hours limiting the equipment from performing its assigned primary mission/function during the month. The SCIR-3 also denotes the equipment's utilization, by BU/SERNO, during the month. To determine the limiting (worst thing wrong) discrepancies during a half hour period the bin technique, discussed in paragraph 17.1.3, must be used. Although there are various methods in calculating this report, the bin loading technique, discussed in paragraph 17.1.3, will be used to explain the calculations required of the SCIR-3.

17.1.4.1.2 Calculating Discrepancy Hours. Once all data bins have been loaded, as described in paragraph 17.1.3, calculations may be made to produce the discrepancy hours portion of the SCIR-3.

17.1.4.1.2.1 Mission Status Count:

A - Total of all status counts for a Mission Code.
C - Total of one status count for a Mission Code.
H - Total hours for a Mission Code.

$\underline{H(C)}$ - Hours Applied to each mission status
 A

Example
```
M  S  U  S
I  U  N  C
S  P  S  H
S
Z  1  3  5
   0  0
```

This is the sum of 14 bins during a reporting period with Mission Code Z.

$\underline{7.0\ (10)}$ = 1.555 Hours for status SUP
   45

$\underline{7.0\ (30)}$ = 4.666 Hours for status UNS
   45

$\underline{7.0\ (\ 5)}$ = .777 Hours for status SCH
   45

17.1.4.1.2.2 Each calculation will be carried to three decimal places with no rounding. All hour accumulations will be rounded and printed to the nearest whole hour.

17.1.4.1.2.3 The formula must be applied to each Mission Code, for a BU/SERNO, prior to accumulating equipment discrepancy hours.

17.1.4.1.3 Accumulation of Equipment Discrepancy Hours. The following procedures will be used to generate discrepancy hours:

a. FMC MNT HRS is the total accumulation of hours, for a BU/SERNO, with no mission codes and status of UNS.

b. FMC SUP HRS is the total accumulation of hours, for a BU/SERNO, with no mission codes and status of SUP.

c. PMC MNT HRS is the total accumulation of hours, for a BU/SERNO, with Mission Codes of C-L and status of UNS.

d. PMC SUP HRS is the total accumulation of hours, for a BU/SERNO, with Mission Codes of C-L and status of SUP.

e. NMC SCH HRS is the total accumulation of hours, for a BU/SERNO, with a Mission Code of Z and status of SCH.

f. NMC UNS HRS is the total accumulation of hours, for a BU/SERNO, with Mission Codes of W-Z and status of UNS.

g.   NMC SUP HRS is the total accumulation of hours, for a BU/SERNO with Mission Codes of W-Z and status of SUP.

17.1.4.1.4 Calculating EIS and EOS Hours. The following procedures will be used to generate the EIS and EOS hours:

a.   Select all VIDS/MAF Copy 1s with TRCODEs 00, 02, and 03 for each BU/SERNO submitted during the month, including the master record. Arrange these transactions, chronologically, by Julian date and time.

b.   The completed date/time (Blocks B30 and B34) will be used for the begin date and time of each inventory transaction. The completed date/time of the next inventory transaction will be used to generate the end time of the previous inventory transaction. The last Julian date (as of 2400) for the month, will generate the end date/time of the last inventory transaction.

c.   The applicable elapsed time will be determined by finding the difference between begin and end times of each inventory transaction. By accumulating these elapsed times, EIS and EOS can be determined as follows:

> EIS = The total elapsed time for all Inventory Codes A.
> EOS = The total elapsed time for all Inventory Codes 1-8.

17.1.4.1.5 Equipment Utilization (EQUIPUTL) Hours. If position 1 of TEC is equal to G, H, or S, position 1 of meter (master record) will be printed in the left most position of the field. Positions 2-5 will be the result of meter (POS 2-5) of the last VIDS/MAF Copy 1 submitted minus the meter (POS 2-5) of the master record. COMDAT/COMTIM will be used to determine the last VIDS/MAF Copy 1 submitted. If no VIDS/MAF Copy 1s were submitted with meter entries during accounting period, zero fill if result of subtraction is negative, complement the results.

17.1.4.1.6 Flight Hours (FLTHRS).   These hours are generated by accumulating all entries for a BU/SERNO, from HRS1, HRS2, and HRS3 (Blocks 7B-27, 33 and 39) of the applicable Naval Aircraft Flight Records (OPNAV 3710/4). Totals are to be accumulated in tenths of hours and rounded to the nearest whole hour when printing.

17.1.4.1.7 Total Flights (TOTFLT). Total flights are generated by accumulating all entries for a BUNO, from TOTFLT (Block 7B-44) of the applicable Naval Aircraft Flight Records (OPNAV 3710/4) during the accounting period.

17.1.4.1.8 Total SCIR HRS (TOTSCIRHRS). These hours are the accumulation of all SCIR related gripe life hours extracted from the VIDS/MAF Copy 1 maintenance actions, by BU/SERNO, for the accounting period. Paragraph 17.1.5 contains the rules for determining the gripe life hours for each SCIR related record. These hours are accumulated based on the computed BEGINBIN and ENDBIN for each event.

17.1.4.2 Calculating Equipment Capability for the SCIR-4

17.1.4.2.1 This report is designed to reflect, by BU/SERNO, an equipment's capability to perform its assigned missions or functions during a reporting period. This report may be used in conjunction with the SCIR-3 in determining the contributing hours and conditions (maintenance/supply) limiting an equipment's capability to perform these assigned primary missions or functions. Although there are various methods in calculating an equipment's capability, the bin loading technique, discussed in paragraph 17.1.3, will be used to explain the calculations required of the SCIR-4.

17.1.4.2.2 Calculating Capability Percentages. Once all data bins have been loaded, as described in paragraph 17.1.3, calculations may be made to produce the SCIR-4. The following paragraphs provide the details for determining mission capability percentages:

a. FMC A is the difference between the EIS hours for that BU/SERNO and the total mission capable hours for EOCs (C-Z) divided by the EIS hours for that BU/SERNO. The result is multiplied by 100.

$$FMC = 100 \frac{(EIS\ HRS - C\ through\ Z\ HRS)}{EIS\ HRS}$$

b. The remainder of the EOC codes, C-L and W-Z, will be calculated per paragraph 17.1.4.3.3.

17.1.4.2.3 Calculating EIS, EOS, and EAH. The following procedures will be used to generate the EIS, EOS, and EAH:

a. Select all VIDS/MAF Copy 1s with TRCODEs 00, 02, and 03 for each BU/SERNO submitted during the month, including the master record. Arrange these transactions, chronologically, by Julian date and time.

b. The completed date/time (Blocks B30 and B34) will be used for the begin date and time of each inventory transaction. The completed date/time of the next inventory transaction will be used to generate the EOS and EAH.

c. The completed date/time (Blocks B30 and B34) will be used for the begin date and time of each inventory transaction. The completed date/time of the next inventory transaction will generate the end date/time of the previous inventory transaction. The last Julian date (as of 2400) for the month will generate the end date/time of the last inventory transaction.

d. The applicable elapsed time may be determined by finding the difference between begin and end times of each inventory transaction. By accumulating these elapsed times, EIS, EOS, and EAH can be determined as follows:

> EOS = The total elapsed time for all Inventory Codes 1-8.
> EIS = The total elapsed time for all Inventory Codes A.
> EAH = The sum of EIS and EOS hours.

17.1.4.2.4 Calculating the Average Equipment Capability (AVG). The following procedures will be used to generate the average mission capability, by TEC, for the reporting period:

a. Total all related hours for each Mission Code, by TEC, and divide this sum by the total EIS hours for that equipment. The result is then multiplied by 100.

$$AVG\% = 100 \frac{(EQUIP\ MISSION\ CODE\ HRS)}{(EIS\ HRS)}$$

b. Apply the above formula to the sum of each Mission Code containing any contributing hours.

17.1.4.2.5 Calculating FMC, PMC, and NMC Hours and Percentages. The following procedures will be used for generating FMC, PMC, and NMC hours and percentages:

a. FMC HRS = The total accumulated hours for an equipment with no mission codes. This sum is rounded and printed in whole hours.

   b.   FMC % = FMC HRS divided by total EIS hours. The result multiplied by 100, carried to three decimal places and rounded to one.

   c.   PMC HRS = The total accumulated hours, for an equipment, with Mission Codes C-L. This sum is rounded and printed in whole hours.

   d.   PMC % = PMC HRS divided by total EIS hours. The result multiplied by 100, carried to three decimal places and rounded to one.

   e.   NMC HRS = The total accumulated hours, for an equipment, with Mission Codes W-Z. This sum is rounded and printed in whole hours.

   f.   NMC % = NMC HRS divided by total EIS hours. The result multiplied by 100, carried to three decimal places and rounded to one.

17.1.4.2.6 Total EIS, EOS, and EAH. These hours are the accumulated sum, for the TEC, by each value of the associated BU/SERNO.

17.1.4.3 Calculating Equipment Mission Capability Summary Report for the SCIR-5-1

17.1.4.3.1 This report is designed to reflect SCIR hours by Mission Category and AWM hours by Reason Codes, summarized for a given EOC and associated WUC, within TEC and ORG. The technique discussed in paragraph 17.1.3 is not used in producing this report since all SCIR related records are used in computing this report.

17.1.4.3.2 Extraction of SCIR Data. The technique and rules used to extract SCIR data from the VIDS/MAF Copy 1 are in paragraph 17.1.2.2.2b.

17.1.4.3.3 Calculation of SCIR Data. Once the extraction of SCIR related data is complete, TOTSCIRHRS will be computed, summarized and sorted by EOC and associated WUC within each status of SUP, UNS and SCH for each Mission Code.

17.1.4.3.4 Extraction of AWM Hours. AWM hours will be extracted when SCIR related data is extracted. Those events not SCIR related will be ignored.

17.1.4.3.5 AWM Calculations. The following calculation will be used to generate AWM for the SCIR-5-1:

   a.   AWM (Blocks B38-B49) will be applied to the first encountered valid EOC on the VIDS/MAF Copy 1 by Reason Code and hours on the detail line of the report.

   b.   AWM Reason Code 0 (AWM$_c$) is calculated. Refer to paragraph 17.1.5, Processing Rules for calculating AWM 0.

17.1.4.4 Calculating Equipment Mission Capability for the SCIR-5-2

17.1.4.4.1 This report is designed to reflect SCIR hours by Mission Category and AWM hours by Reason Codes, summarized for a given EOC and associated WUC for each BU/SERNO within TEC and ORG. The technique discussed in paragraph 17.1.3 is not used in producing this report since all SCIR related records are used in computing this report.

17.1.4.4.2 Extraction of SCIR Data. The technique and rules used to extract SCIR data from the VIDS/MAF Copy 1 are in paragraph 17.1.2.2.2b.

17.1.4.4.3 Calculation of SCIR Data. Once the extraction of SCIR related data is complete, TOTSCIRHRS will be computed, summarized and sorted for each BU/SERNO by EOC and associated WUC within each status of SUP, UNS, and SCH for each Mission Code.

17.1.4.4.4 Extraction of AWM Hours. AWM hours will be extracted when SCIR related data is extracted. Those events not SCIR related will be ignored.

17.1.4.4.5 AWM Calculations. The following calculations will be used to generate AWM for the SCIR-5-2.

   a.   AWM (Blocks B38-B49) will be applied to the first encountered valid EOC code on the VIDS/MAF Copy 1 by Reason Code and hours on the detail line of the report.

   b.   AWM Reason Code 0 (AWM_c) is calculated. Refer to paragraph 17.1.5, Processing Rules for calculating AWM 0.

17.1.4.5 Calculating Mission and Maintenance Data for the SCIR-5-3

17.1.4.5.1 This report is designed to reflect SCIR hours by Mission Category and selected maintenance data from SCIR related records. The technique in paragraph 17.1.3 is not used in producing this report since all SCIR related records are used in computing this report.

17.1.4.5.2 Extraction of SCIR Data. The technique and rules used to extract SCIR data from the VIDS/MAF Copy 1 are in paragraph 17.1.2.2.2b.

17.1.4.5.3 Calculation of SCIR Data. Once the extraction of SCIR related data is complete, TOTSCIRHRS will be computed from each VIDS/MAF Copy 1, sorted for each BU/SERNO by EOC code and associated WUC within each status of SUP, UNS, and SCH for each Mission Code.

17.1.4.5.4 Extraction of Maintenance Data. Maintenance data will be extracted when SCIR data is extracted. Those events that are not SCIR related will be ignored.

17.1.4.5.5 Presentation of Maintenance Data. Selected items of maintenance data will be presented as it is documented on the VIDS/MAF Copy 1. Maintenance data consists of JCN, WC, TRCODE, WD, TM, AT, MAL, IP, MHRS, EMT, and DOCNUM.

17.1.5 Processing Rules

17.1.5.1 This paragraph lists all necessary rules for processing SCIR data.

17.1.5.2 Each data bin will have the capability of counting up to nine simultaneous records within each status of SUP, UNS, and SCH. Those records in excess of nine will be ignored.

17.1.5.3 The first position of an EOC code will be used to determine the associated equipment capability. Definition of EOC codes are:

   No EOC - FMC
   C-L - PMC
   W-Z - NMC

17.1.5.4 Scheduled/unscheduled maintenance is determined by rules contained in paragraph 17.1.2.

17.1.5.5 The job status of M or S will be used to determine event status.

17.1.5.6 Each hour calculation will be carried to three decimal places with no rounding. All hour accumulations will be rounded and printed to the nearest whole hour.

17.1.5.7 Each percentage calculation will be carried to three decimal places with no rounding. All percentage accumulations will be rounded and printed to the nearest tenth.

17.1.5.8 All AWM hours, by reason code, will be applied to the first valid EOC encountered in a maintenance record/event.

17.1.5.9 AWM_d is the accumulated sum of all documented AWM hours with Reason Code 1-8 within one record.

17.1.5.10 AWM_c is the result of AWM_t - AWM_d.

17.1.5.11 GL is the elapsed time between received date/time (Blocks B08 and B12) and the completed date/time (Blocks B30 and B34) for one record.

17.1.5.12 GLs is the accumulation of elapsed time for each SCIR related event with valid EOC code and job status of M or S within one record.

17.1.5.13 When the first SCIR related EOC code does not meet the criteria for NMCMS:

$$AWM_t = GL_s - EMT - Supply$$

17.1.5.14 When the first SCIR related EOC code meets the criteria for NMCMS:

$$AWM_t = AWM_d. \quad \text{(There will be no } AWM_c \text{ generated.)}$$

17.1.5.15 When position 2 and 3 of EOC is 03 and TM is E or S and the first SCIR related EOC code meets the criteria for NMCMU:

$$AWM_t = AWM_d \text{ (There will be no } AWM_c \text{ generated.)}$$

17.2 Mission-Essential Subsystems Matrices (MESMs)

17.2.1 Aircraft Readiness

17.2.1.1 The CNO established 73 percent MC and 56 percent FMC as the overall NAE aircraft material readiness goal. A MESM states specific T/M/S MC and FMC readiness goals. Overall NAE aircraft readiness is calculated as an average from specific T/M/S MC and FMC rates as reported by SCIR documentation through MAF EOCs as measured against a MESM (provided on COMNAVAIRFOR's web portal).

17.2.1.2 A MESM is considered essential for performing specific missions, achieving required material condition readiness, maintenance standards, supply system effectiveness, and the safety requirements of OPNAVINST 3710.7.

17.2.2 Mission Readiness

17.2.2.1 A MESM lists subsystems required for specific missions and the impact of subsystem degradation or inoperability through EOCs. EOCs shall be documented only when the described subsystem, capability, function, or mode impacts the specific mission (Chapter 15). In some instances, impact to specific missions is identified at the system level rather than by exact subsystem. The capability to perform specific missions is possible when all subsystems, capabilities, functions, and modes are operable.

NOTE: **Figure 17-3** **provides mission capability rate formulas and examples using accumulated EIS, EOS, and SCIR hours during a reporting period (month).** **Chapter 14** **provides additional guidance on mission capability rate formulas and examples.**

17.2.2.2 A MESM determines supply system project codes. FADs determine supply system priority codes defined in OPNAVINST 4614.1, NAVSUP P437, and NAVSUP P485. One or more requisitions must be outstanding when either an NMCS or PMCS material condition (as applicable) is reported. The following project codes shall be assigned:

   a.   An NMCS project code only if the lack of the required part makes the aircraft incapable of performing any of its missions (EOC alpha character Z). The aircraft is not safely flyable.

   b.   A PMCS project code only if the lack of the required part makes the aircraft incapable of performing one or more, but not all of its missions (EOC alpha character C through L).

   c.   Project code AK1 to all requisitions where lack of the required parts has no MESM impact (no EOC alpha character).

NOTE: **Assigning an NMCS or PMCS project code when there is no MESM impact to expedite receipt of the material requisition is abuse of the supply system.**

17.2.2.3 EOCs are used to develop, allocate, and justify naval aviation logistic support budgets and to determine material essential codes for supply management purposes. Reporting activities must accurately submit actual material condition, as measured against the MESM.

17.2.2.4 MESM-driven MDS products shall be used to calculate mean time between critical failures for comparison to operational requirement documents and test and evaluation master plans.

NOTE: **SCIR data shall be reported on all T/M/S aircraft assigned to COMNAVAIRSYSCOM RDT&E activities. Aircraft with a RDT&E type aircraft modifier (N-Designated) shall use the basic T/M/S MESM. Basic T/M/S components removed in a RFI status solely to facilitate project installation should not reflect degraded EOC. However, associated wiring and plumbing should be SCIR impacted per the MESM as faults/malfunctions occur. Project and test peculiar equipment are exempt from SCIR reporting.**

17.2.3 Aircraft Material Condition Status Definitions

17.2.3.1 FMC. In MCRS, no outstanding NMCS or PMCS requisitions, no outstanding NMCM or PMCM maintenance actions, no down MAFs, and no EOCs (other than alpha character A). The aircraft is safely flyable and can perform all missions listed in the applicable MESM.

17.2.3.2 PMC. In MCRS, one or more outstanding PMCS requisitions or PMCM maintenance actions with an EOC alpha character of C through L, no outstanding NMCS requisitions, no outstanding NMCM maintenance actions, no down MAFs, and no EOC alpha characters of Z. The aircraft is safely flyable and can perform one or more, but not all missions listed in the applicable MESM.

17.2.3.3 NMC. In MCRS, with one or more outstanding NMCS requisitions or NMCM maintenance actions. All NMC (NMCS, NMCM, or both) discrepancies shall be marked down and have an EOC alpha character of Z assigned. The aircraft is not safely flyable and cannot perform any mission listed in the applicable MESM.

NOTES: **1. NMC aircraft shall not be flown.**

   2. Aircraft out MCRS shall not be flown until returned to in MCRS and restored to PMC as a minimum.

3. All systems should be exercised regularly, ensuring that discrepancies are identified and corrected. Sound maintenance practices mandate removal of PMC aircraft from the flight schedule and inducted into maintenance as soon as practical for FMC restoration.

17.2.4 Commanding Officer (CO) Responsibilities

The CO or detachment OIC shall take direct action to ensure aircraft are properly classified as FMC, PMC, or NMC, ensuring NMC and out MCRS aircraft are not flown. PMC aircraft are not restricted from flying, if in the judgment of the CO or detachment OIC these aircraft are safely flyable for the assigned mission.

17.2.5 Mission-Essential Subsystems Matrix (MESM) Construction Procedures

17.2.5.1 Prior to construction of a MESM, T/M/S missions shall be determined. The missions defined in operational requirement documents are used as a general guide in the development of T/M/S mission descriptions. Tactical manual definitions are used to expand on detailed mission descriptions required for MESM construction.

NOTE: **Figures 17-4 and 17-5 provide MESM change recommendation basic flow processes.**

17.2.5.2 After mission descriptions have been formalized, the subsystems, capabilities, functions, and modes required to perform each individual mission are determined.

17.2.5.3 The Program Manager shall develop MESMs for new T/M/S aircraft prior to operational evaluation. Design and engineering personnel determine which subsystems, capabilities, functions, and modes are required to perform each mission.

17.2.5.4 A MESM (Figure 17-6) provides guidance for determining subsystem, capability, function, and mode interrelationships. The matrix is designed with vertical columns identifying each specific mission in descending order, with FMC to minimum capability PMC, ranging left to right. The matrix may be used as follows:

NOTE: **For similar aircraft, manuals, such as IPBs, MIMs, and NATOPS, may be used as secondary information sources.**

    a. Unclassified descriptive names are used to identify each mission.

    b. The subsystems, capabilities, functions, or modes are listed horizontally under the MISSION ESSENTIAL EQUIPMENT column with an "X" placed in each of the mission columns for which the equipment is required:

       (1) Holes may appear in the matrix, for example, EQUIPMENT 7, relative to the FMC mission with equipment that is installed/not installed. When this occurs, it is necessary to re-evaluate the impact of the equipment on that specific mission and decide if the hole should be ignored or if an attempt to rearrange the equipment to mission correlation in the matrix should be made.

       (2) When, subsystems, capabilities, functions, or modes are identified for each mission, it may be discovered that only specific modes of operation are required to perform that particular mission and should be indicated, for example, EQUIPMENT 3, EOC alpha designator C.

       (3) Redundant subsystems, for example, primary and backup, are grouped together specifying the number or positions required to perform the mission, for example, EQUIPMENT 4 and EQUIPMENT 5.

    c. EOC alpha character C through K is assigned to inoperative subsystems, capabilities, functions, or modes that degrade the aircraft from FMC to PMC, thus preventing a specific mission. EOC alpha character L is assigned to inoperative subsystems, capabilities, functions, or modes which prevent Instrument

Meteorological Conditions flight missions. EOC alpha character Z is assigned to subsystems, capabilities, functions, or modes which degrade the aircraft from FMC or PMC to NMC.

d.   Major systems, subsystems, or equipment, for example, engines, electrical systems, or flight controls, that do not otherwise appear in the MESM, but which, when inoperative, preclude safe flight or operation, are assigned EOC alpha character Z.

e.   MME is a specialized subsystem, capability, function, or mode which gives the aircraft capabilities required for special missions, for example, tanker packages, defensive electronic countermeasures, chaff dispensers, and Sidewinder missile systems. When MME is installed, the complete system is reported. If MME is not installed and the necessary wiring and plumbing are permanently installed, only the wiring and plumbing is reported. A note to this effect is included for each MME in the MESM.

f.   Any comment required to explain why a particular subsystem, capability, function, or mode is in the MESM having one of several interpretations, is included in the matrix development as a note.

g.   EOC alpha characters are determined by identifying the last subsystem, capability, function, or mode displaying an "X" in the mission category. For example, Figure 17-6 lists all equipment required to make the aircraft FMC. If EQUIPMENT 1 is inoperative, the EOC alpha character assigned is C, indicating that without EQUIPMENT 1 the aircraft is only capable of missions less than FMC. The second and third characters of the EOC code are computer generated comprising the first two characters of the WUC of the degraded or inoperable subsystem, capability, function, or mode having mission impact.

17.2.5.5 When the matrix has been completed, the specific missions defined, and an EOC alpha character assigned to specific missions, the actual MESM is constructed as follows:

a.   The EOC alpha character assigned to each mission will be used as the first sentence of each mission description.

b.   Subsystems, capabilities, functions, modes, and EOCs are listed under the mission assigned.

c.   Notes will be annotated at the right margin and listed at the end of the MESM in numerical order.

NOTE: **Figure 17-7 provides an example of a new T/M/S MESM for submittal to COMNAVAIRFOR (N422C) by e-mail via the T/M/S NAVAIR PMA Office. COMNAVAIRFOR (N422) shall approve a new T/M/S MESM by naval letter.**

17.3 Aviation Financial Analysis Tool (AFAST)

17.3.1 The AFAST program is designed to provide visibility of fuel and maintenance cost associated with the Flying Hour Program. Source files extracted from NALCOMIS, the Aircraft Cost Evaluation System (ACES), and the Standard Accounting and Reporting System – Field Level (STARS-FL) are used to update the AFAST database. NALCOMIS extracts are produced by ad hoc queries which are provided by the AFAST project office. The queries provide O-level/I-level requisition and I-level maintenance and disposition data, which allow initial cost data to be calculated and associated with squadrons and T/M/S aircraft. STARS-FL extracts provide final cost data and are used to update AFAST records. Squadron fuel cost and flight hours are extracted from the ACES flight operations cost report. Using the AFAST products available on the AFAST web portal, cost data can be broken down by WUC, work center, JCN, organization code, NIIN, and family group code.

17.3.2 AFAST provides users the ability to track and evaluate the Flying Hour Program funds, AVDLR cost, AFM cost, and flight hours by squadron at the T/M/S level. AFAST is for maintenance managers to monitor

maintenance trends, track squadron consumable usage, repair and return support, identify "bad actors", track parts usage by WUC or ORG code, and track financial expenditures.

17.3.2.1 AFAST products are produced monthly and each month's product set contains data through the previous month. In order for the products to contain pertinent data, activities that use NALCOMIS OIMA shall submit the first input between the first and the fourth day of the month. Subsequent data submissions will then occur every Tuesday; which occurs between the seventh and the twenty-seventh of the month.

17.3.2.2 AFAST NALCOMIS Ad Hoc Query Set. Activities which use NALCOMIS IMA will run the SQL queries using an automated database, MyUpline, available from the AFAST web portal. Manual input procedures are available within this database and are also available by contacting personnel in the AFAST project office. Contact information is available on the AFAST sharepoint web site.

17.3.2.3 AFAST data requirements were designed so as not to be burdensome on any command. Time spent to prepare and submit NALCOMIS data extracts is estimated to be less than one-man-hour per week. If additional man-hours are required, commands are advised to seek training assistance from the AFAST project office.

LINE 1	B15M	B15M	B15M			
LINE 2	B14M	Z97M	Z97S	Z97M	B14M	
LINE 3	B17M	B17M	B17S	B17S	B17S	B17S	B17S
LINE 4			Z03M	Z03M	Z03M		
LINE 5			D41M	D41S	D41S	D41S	D41M
LINE 6							3

Figure 17-1: Bin Loading Example Chart A

	BIN - 1				BIN - 2				BIN - 3				BIN - 4				BIN - 5				BIN - 6				BIN - 7			
	MISPS	SUPS	UNS	SCH	MISPS	SUPS	UNS	SCH	MISPS	SUPS	UNS	SCH	MISPS	SUPS	UNS	SCH	MISPS	SUPS	UNS	SCH	MISPS	SUPS	UNS	SCH	MISPS	SUPS	UNS	SCH
LINE 1	A	1			A	1			A	1																		
LINE 2	A	2			Z	1			Z	1			Z	1			A	1										
LINE 3	A	3			Z	1			Z	1			Z	1			A	1	1		A	1			A	1		
LINE 4	A	3			Z	1			Z	1		1	Z	1	1		Z		1		A	1			A	1		
LINE 5	A	3			Z	1			Z	1		1	Z	1	1		Z		1		D	1			D			1
LINE 6	A	3			Z	1			Z	1		1	Z	1	1		Z		1		D	1				3		
TOTAL	A	3			Z	1			Z	1		1	Z	1	1		Z		1		D	1				3		

Figure 17-2: Bin Loading Example Chart B

$$MC\ \% = \frac{TOTAL\ EIS\ HOURS\ -\ (NMCS+NMCM)\ HOURS}{TOTAL\ EIS\ HOURS}\ X\ 100$$

1.   MC: Reflects the percentage of all aircraft assigned to a unit, based on total accumulated EIS hours during a reporting period, which were capable of performing at least one, but not all missions.

$$FMC\ \% = \frac{TOTAL\ EIS\ HOURS\ -\ (NMCS\ +\ NMCM\ +\ PMCS\ +\ PMCM)\ HOURS}{TOTAL\ EIS\ HOURS}\ X\ 100$$

2.   FMC: Reflects the percentage of all aircraft assigned to a unit, based on total accumulated EIS hours during a reporting period, which were capable of performing all missions.

$$NMC\ \% = \frac{TOTAL\ NMC\ HOURS}{TOTAL\ EIS\ HOURS}\ X\ 100$$

3.   NMC: Reflects the percentage of all aircraft assigned to a unit, based on total accumulated EIS hours during a reporting period, which were not capable of performing any mission.

$$NMCM\ \% = \frac{TOTAL\ NMCM\ HOURS}{TOTAL\ EIS\ HOURS}\ X\ 100$$

4.   NMCM: Reflects the percentage of all aircraft assigned to a unit, based on total accumulated EIS hours during a reporting period, which were not capable of performing any mission due to maintenance.

$$PMC\ \% = \frac{TOTAL\ PMC\ HOURS}{TOTAL\ EIS\ HOURS}\ X\ 100$$

5.   PMCM: Reflects the percentage of all aircraft assigned to a unit, based on total accumulated EIS hours during a reporting period, which were capable of performing at least one, but not all missions, due to maintenance.

Examples of Mission Capability Ratings:

A unit assigned 12 aircraft during the month of April (8640 total possible EIS hours), has 2 aircraft in depot status for 20 days (960 EOS Hours). Hours were distributed as follows:

NMCS - 1250; NMCM – 1600; PMCS – 2000; PMCM – 500

Total EIS HOURS = 8640 – 960 = 7680

$$MC\ \% = \frac{7680\ -\ 2850}{7680}\ X\ 100 \quad = 62.89\ \%$$

$$FMC\ \% = \frac{7680\ -\ 5350}{7680}\ X\ 100 \quad = 30.34\ \%$$

$$NMC\ \% = \frac{2850}{7680}\ X\ 100 \quad = 37.11\ \%$$

$$NMCM\ \% = \frac{1600}{7680}\ X\ 100 \quad = 20.83\ \%$$

$$PMC\ \% = \frac{2500}{7680}\ X\ 100 \quad = 32.55\ \%$$

NOTE: **Mission capability percentages are computed using accumulated EIS, EOS, and SCIR hours during a reporting period.**

Figure 17-3: Mission Capability Rate Formulas and Examples
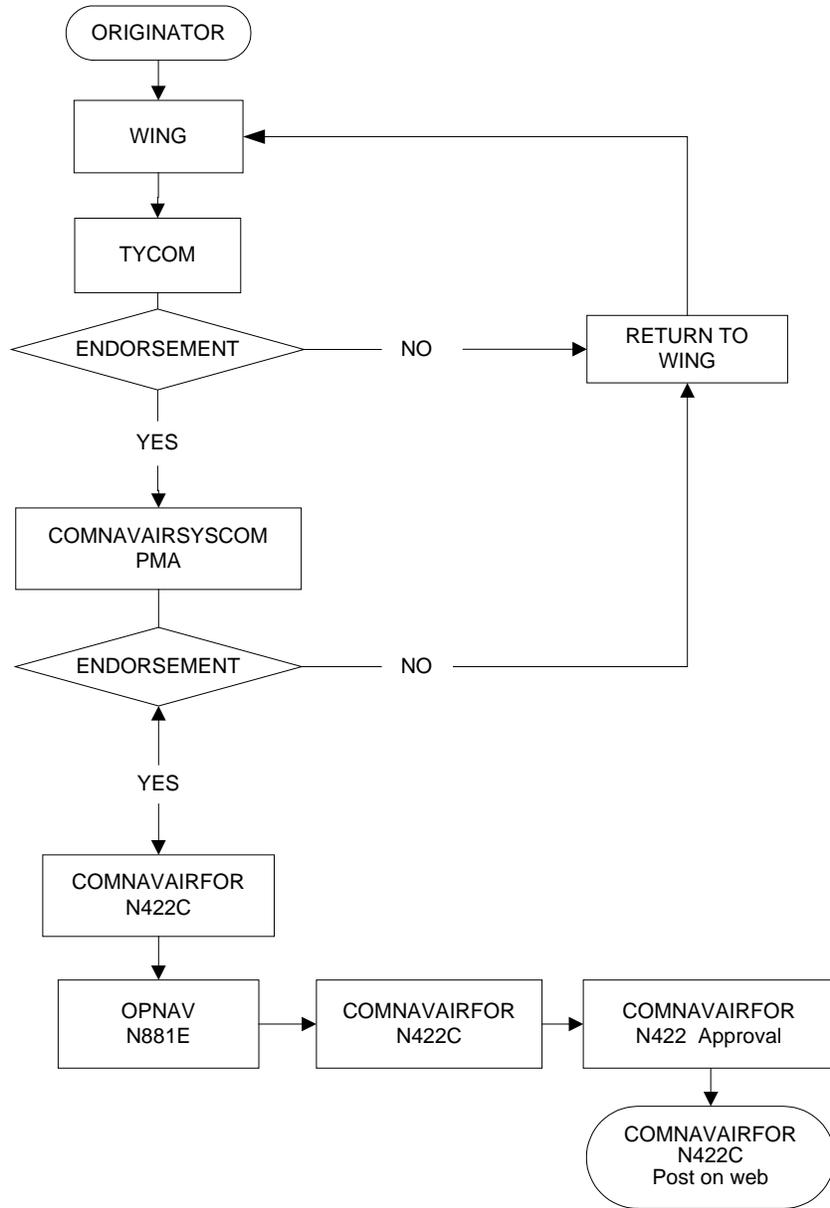
```
                    ORIGINATOR

                       WING  ◄──────────────────────┐
                                                     │
                      TYCOM                          │
                                                     │
              ENDORSEMENT ──── NO ────►  RETURN TO   │
                   │                       WING      │
                  YES                                │
                   │                                 │
            COMNAVAIRSYSCOM                          │
                 PMA                                 │
                   │                                 │
              ENDORSEMENT ──── NO ──────────────────┘
                   │
                  YES
                   │
            COMNAVAIRFOR
               N422C
                   │
     OPNAV ──► COMNAVAIRFOR ──► COMNAVAIRFOR
     N881E        N422C          N422  Approval
                                       │
                               COMNAVAIRFOR
                                   N422C
                                 Post on web
```

NOTE: **MESM change recommendations shall be routed through the originator's chain of command and processed per this basic flow process. COMNAVAIRFOR (N422C) shall receive MESM change recommendations by e-mail with all endorsements attached. When modifications to out of production aircraft require a MESM change, the T/M/S COMNAVAIRSYSCOM PMA Office will develop and submit the MESM change recommendation. All MESM changes shall be approved by naval letter.**

**Figure 17-4: Mission-Essential Subsystems Matrix (MESM) Change Recommendation
Basic Flow Process (Navy)**
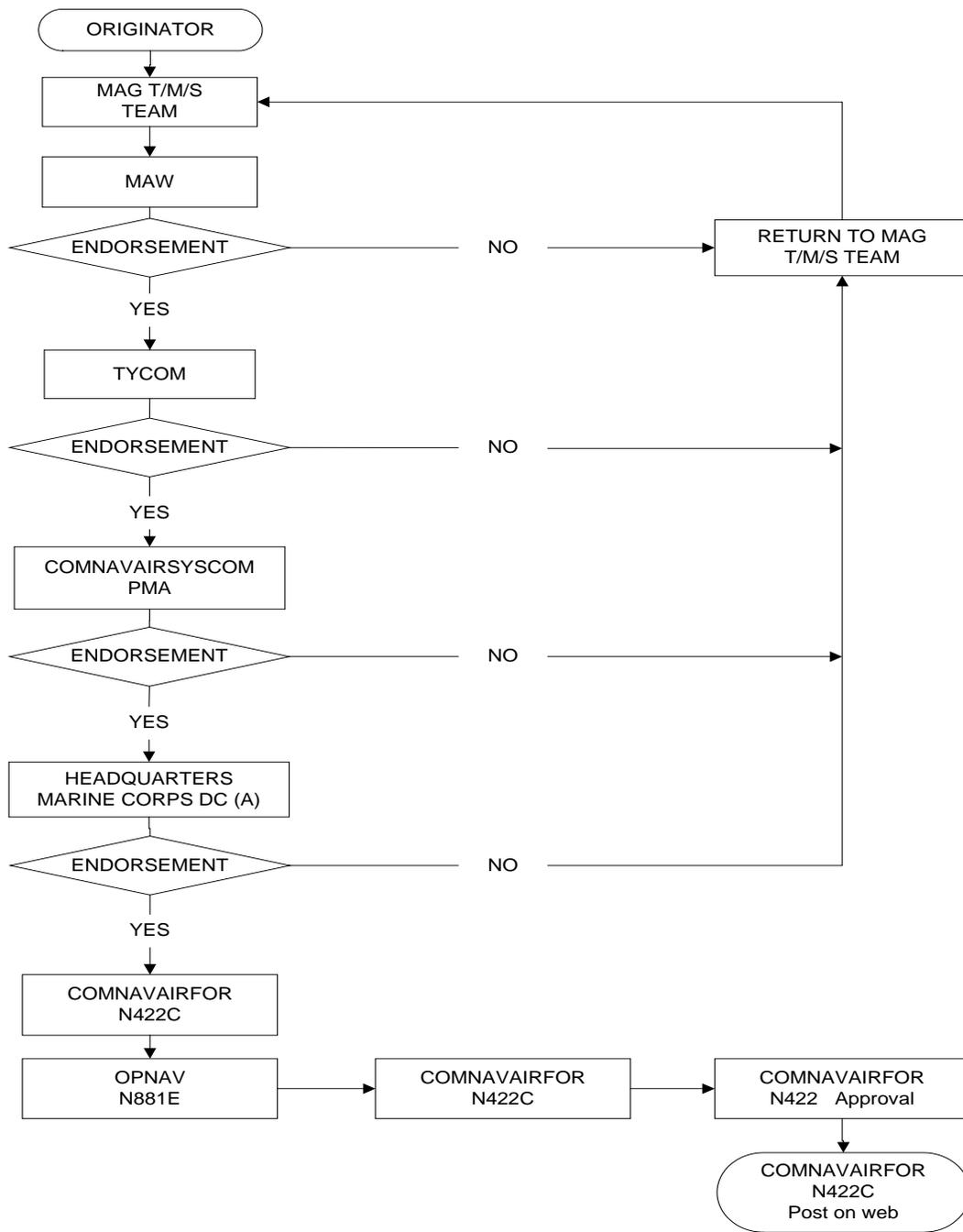
```
                    ┌─────────────────┐
                    │   ORIGINATOR    │
                    └────────┬────────┘
                             │
                    ┌────────▼────────┐                        ┌──────────────┐
                    │   MAG T/M/S     │◄───────────────────────┤              │
                    │     TEAM        │                        │              │
                    └────────┬────────┘                        │              │
                             │                                 │              │
                    ┌────────▼────────┐                        │              │
                    │      MAW        │                        │              │
                    └────────┬────────┘                        │              │
                             │                                 │              │
                        ◄────▼────►          NO        ┌───────▼────────┐
                     ENDORSEMENT ──────────────────────►  RETURN TO MAG  │
                        ◄─────────►                    │   T/M/S TEAM    │
                             │                         └───────▲────────┘
                            YES                                │
                             │                                 │
                    ┌────────▼────────┐                        │
                    │     TYCOM       │                        │
                    └────────┬────────┘                        │
                             │                                 │
                        ◄────▼────►          NO                │
                     ENDORSEMENT ──────────────────────────────┤
                        ◄─────────►                            │
                             │                                 │
                            YES                                │
                             │                                 │
                    ┌────────▼────────┐                        │
                    │ COMNAVAIRSYSCOM │                        │
                    │      PMA        │                        │
                    └────────┬────────┘                        │
                             │                                 │
                        ◄────▼────►          NO                │
                     ENDORSEMENT ──────────────────────────────┤
                        ◄─────────►                            │
                             │                                 │
                            YES                                │
                             │                                 │
                    ┌────────▼────────┐                        │
                    │  HEADQUARTERS   │                        │
                    │MARINE CORPS DC(A)│                       │
                    └────────┬────────┘                        │
                             │                                 │
                        ◄────▼────►          NO                │
                     ENDORSEMENT ──────────────────────────────┘
                        ◄─────────►
                             │
                            YES
                             │
                    ┌────────▼────────┐
                    │  COMNAVAIRFOR   │
                    │     N422C       │
                    └────────┬────────┘
                             │
        ┌────────────────┐   │   ┌────────────────┐   ┌──────────────────┐
        │     OPNAV      │◄──┘   │  COMNAVAIRFOR   │   │  COMNAVAIRFOR    │
        │     N881E      ├──────►│     N422C       ├──►│ N422   Approval  │
        └────────────────┘       └────────────────┘   └────────┬─────────┘
                                                                │
                                                        ┌───────▼────────┐
                                                        │  COMNAVAIRFOR  │
                                                        │     N422C      │
                                                        │  Post on web   │
                                                        └────────────────┘
```

NOTE: MESM change recommendations shall be routed through the originator's chain of command and processed per this basic flow process. COMNAVAIRFOR (N422C) shall receive MESM change recommendations by e-mail with all endorsements attached. When modifications to out of production aircraft require a MESM change, the T/M/S COMNAVAIRSYSCOM PMA Office will develop and submit the MESM change recommendation. All MESM changes shall be approved by naval letter.

**Figure 17-5: Mission Essential Subsystems Matrix (MESM) Change Recommendation
Basic Flow Process (Marine Corps)**

EOC	CHARACTER ALPHA	MISSION ESSENTIAL EQUIPMENT	FMC MISSION	PMC MISSION	PMC MISSION	PMC MISSION	PMC MISSION	PMC MISSION	SAFELY FLYABLE
C		EQUIPMENT 1							
C		EQUIPMENT 2	X						
C		EQUIPMENT 3 (T/A MODE REQUIRED)	X						
D		EQUIPMENT 4 (2 OF 2 REQUIRED)	X	X					
D		EQUIPMENT 5 (POSITIONS 4 & 5 REQUIRED)	X	X					
J		EQUIPMENT 6	X	X	X				
J		EQUIPMENT 7 (NOTE)	X	X	X				
K		EQUIPMENT 3 (T/F MODE REQUIRED)	X	X	X	X			
L		EQUIPMENT 8	X	X	X	X	X		
Z		EQUIPMENT 9	X	X	X	X	X		X
Z		ENGINE	X	X	X	X	X		X

NOTE: When the equipment is installed, report on the complete system.
If the equipment is not installed, report on the wiring and plumbing only.

Figure 17-6: Mission Essential Equipment Functional Matrix

```
                      F/A-18E/F
            TYPE EQUIPMENT CODES: AMAH/AMAJ
```

Do not assign an EOC code if all equipment is operational. The
aircraft is FMC.

Assign alpha character (C) of the EOC code when the following systems
are inoperative degrading the capability of high threat combat
operations. The aircraft is not capable of deploying an RF decoy and
the Dry Bay Fire Suppressant System is not functional. The aircraft
is PMC, M or S.

LIST SYSTEMS HERE   (NOTE #)

Assign alpha character (J) of the EOC code when the following
system(s) are inoperative preventing the basic strike fighter
mission. The aircraft is not capable of conducting air / maritime
interdiction, mining, reconnaissance, close air support, forward air
control airborne, offensive / defensive counter air, alert launched
intercept, basic fighter maneuvering, or war-at-sea missions using
all weapons and delivery modes regardless of terrain, weather, or
enemy defenses. The aircraft is PMC, M or S.

LIST SYSTEMS HERE   (NOTE #)

Assign alpha character (K) of the EOC code when the following
system(s) are inoperative preventing the expanded mobility mission.
The aircraft is not capable of safe movement on and off CV during
day, night and inclement weather conditions, conducting independent
navigation. The aircraft is PMC, M or S.

LIST SYSTEMS HERE   (NOTE #)

Assign alpha character (Z) of the EOC code when the following
systems(s)/conditions(s) prevent the aircraft from being safely
flyable. The aircraft is not capable of day VMC field flight
operations with two-way radio communication and necessary aircraft
and crew safety provisions. The aircraft is NMC, M or S.

LIST SYSTEMS HERE   (NOTE #)

NOTES: (List applicable system, subsystem, capability, function, or
mode conditions here)

GENERAL NOTES: (List here)

Figure 17-7: T/M/S Aircraft Mission-Essential Subsystems Matrix (MESM) (Example)