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A USER DEFINABLE SLAM AIRFIELD MODEL
DESIGNED FOR
EXPERIMENTATION AND ANALYSIS
VOLUME II

THESIS

AFIT/GST/OS/82M-9 Robert W. Mann
Maj USAF
Brian J. Shook
2Lt USAF

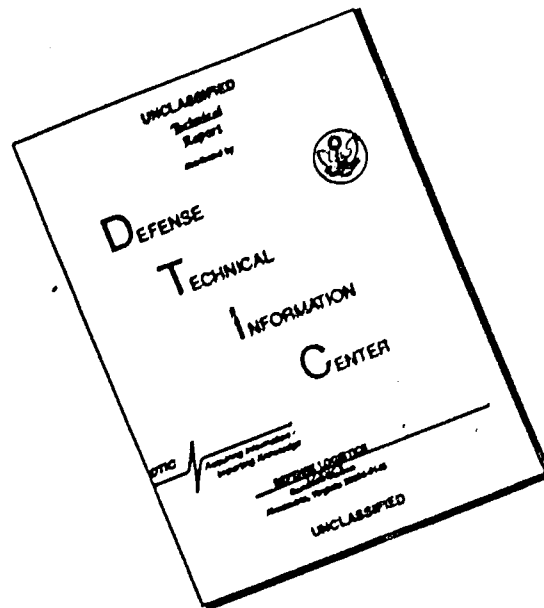
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Thesis

A USER DEFINABLE SLAM AIRFIELD MODEL
DESIGNED FOR
EXPERIMENTATION AND ANALYSIS
Volume II

by

Robert W. Mann
Maj USAF

and

Brian J. Shook
2Lt USAF

Prepared in partial
fulfillment of
requirements for a
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School of Engineering
Air Force Institute of Technology
Wright-Patterson Air Force Base
Ohio

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Volume II

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Appendix A: SLAM Coding and Structural Model

This appendix contains the entire SLAM coding required to execute the airfield model on the Control Data Corporation (CDC) 6600 system at Aeronautical Systems Division, Wright-Patterson AFB, Ohio.

The graphical depictions of the structural model are inserted following each functional section of the code listing.

```

1      . * JOB CONTROL LANGUAGE
2      . * THE MODEL WILL RUN WITH JUST UNDER CM250000. CP TIME WITHOUT ANY
3      . * TRACE WILL BE UNDER T180. INPUT/OUTPUT TIME WILL BE UNDER I0360.
4      . * THE LIMITS SHOWN WERE ADEQUATE TO GENERATE 90000 LINES OF OUTPUT
5      . * WITH TRACE FOR SIX SQUADRONS OF SIXTEEN AIRCRAFT WITH REPLACEMENT
6      . * SQUADRONS REQUIRED WHEN OPERATIONAL AIRCRAFT IN A SQUADRON FELL
7      . * BELOW 12. THE SUPPORTING FORTRAN IS COMPILED EXTERNALLY AND
8      . * STORED IN AN IFS FILE WHICH IS ACCESSED BY THE JCL.
9      . *
10     RWM,CM250000,T240,I0400. T800845,MANN,BOX4566,AFIT,AFIT,AFIT,91,91,91
11     ATTACH,PROCFIL,ID=A810171,SN=ASDAD.
12     BEGIN,NOSFILE.
13     GET,FZZCBIN,ID=COVEY.
14     REWIND,FZZCBIN.
15     ATTACH,PROCFIL,SLAMPROC,ID=AFIT.
16     BEGIN,SLAM,,M=FZZCBIN,PL=100000.

```

```

17 ; SIMULATION CONTROL STATEMENTS
18 ; THE GEN CARD IS STANDARD. THE LIMITS CARD ALLOWS FOR 99 FILES.
19 ; FILE 46 IS NOT CURRENTLY USED. 48 ATTRIBUTES ARE USED.
20 ; ATTRIBUTES 1 THROUGH 30 ARE AIRCRAFT ATTRIBUTES. PILOTS HAVE
21 ; ATTRIBUTES 1 THROUGH 12. WHEN PILOTS GET INTO AN AIRCRAFT THEIR
22 ; ATTRIBUTES ARE TRANSFERRED INTO AIRCRAFT ATTRIBUTES 31 THROUGH 42.
23 ; THE REMAINING AIRCRAFT ATTRIBUTES, 43 THROUGH 48, ARE MISSION
24 ; ATTRIBUTES FOR THE FLIGHT AS A WHOLE. ONLY AIRCRAFT AND PILOTS
25 ; CARRY ATTRIBUTES. INDIVIDUAL ATTRIBUTES ARE ENUMERATED BELOW-
26 ;
27 ; AIRCRAFT ATTRIBUTES
28 ;
29 ; 1 - SQ ID NUMBER (1-6)
30 ; 2 - TAIL NUMBER
31 ; 3 - TYPE PARKING, 0- SHELTER ON QRA, 1- SHELTER, 2- REVETMENT,
32 ; 4- WING MX REVETMENT, 5- NOT PARKED
33 ; 4 - # SORTIES ON DAY 1
34 ; 5 - # SORTIES ON DAY 2
35 ; 6 - # SORTIES ON DAY 3
36 ; 7 - TOTAL MINUTES ENGINE RUN TIME
37 ; 8 - TEMPORARY STORAGE FOR SERVICE DURATIONS TO INCREMENT ATRIB 7
38 ; 9 - GUN STATUS, 0- EXPENDED, UNLOADED, 1- LOADED, 2- RUNAWAY,
39 ; 3- EXPLODED WHEN FIRED
40 ; 10 - BOMBS/RX, 0- EXPENDED, UNLOADED, 1- LOADED, 2- HUNG
41 ; 11 - MISSILES(AIM OR AGM), 0- EXPENDED, UNLOADED, 1- LOADED,
42 ; 2- MALFUNCTIONED
43 ; 12 - CONFIGURATION BY AREA (1,2, OR 3)(SET IN USER)
44 ; 13 - AIRCRAFT LOCATION ON THE AIRFIELD
45 ; 14 - AIRCRAFT GROUND TIME WITH ENGINE RUNNING
46 ; 15 - WHILE AIRCRAFT IS ON MISSION IT IS MISSION DURATION, AFTER
47 ; LANDING IT IS SET TO FUEL REQUIRED DURING REFUELING
48 ; 16 - BATTLE DAMAGE CODE, 0- NONE, 1- LIGHT(SMALL ARMS),
49 ; 2- HEAVIER LIGHT(FRAG), 3-MODERATE(SOME STRUCTURAL DAMAGE
50 ; BUT PROBABLY REPAIRABLE), 4- SERIOUS(DIFFICULT TO FLY AND
51 ; A LONG REPAIR TIME OR UNABLE TO REPAIR LOCALLY), 5- SEVERE
52 ; (CRASH LANDED, CANNOT BE REPAIRED LOCALLY IF AT ALL)
53 ; 17 - SYMPATHETIC ABORT CODE, 1- GROUND, 2- AIR, ALSO MAINTENANCE
54 ; PROCESSING PRIORITY CODE IF AIRCRAFT DO NOT PROCEED TO
55 ; TURNAROUND SERVICE DIRECTLY. PRIORITY CODE FOR WING IS
56 ; THE SUM OF THE 4 AND 5 LEVEL FAILURES. FOR MMT THE SAME.
57 ; FOR SQUADRON MX IT IS THE SUM OF THE 2,3,4 AND 5 FAILURES.
58 ; PROCESSING IS ACCOMPLISHED USING LOW VALUE FIRST FOR THIS
59 ; ATTRIBUTE (FIX THE LEAST BROKE FIRST)
60 ; 18 - MAINTENANCE FAILURE CODE -A SIX DIGIT CODE WITH EACH DIGIT, IN
61 ; ORDER, RELATED TO FAILURES IN THE SYSTEMS WHOSE NEXT TIME OF
62 ; FAILURE IS CARRIED BY ATTRIBUTES 19 THROUGH 24. FAILURE
63 ; OF A SYSTEM OCCURS WHEN ENGINE RUN TIME EXCEEDS THE NEXT
64 ; TIME OF FAILURE OF A SYSTEM. THE LEVEL OF FAILURE IS SET
65 ; PROBABILISTICALLY.
66 ; 19 - NEXT TIME OF FAILURE (NTOF) OF SYSTEM 1 - ELECTRICAL

```

67 ; 20 - NTOF OF SYSTEM 2 - ENGINE/FUEL
68 ; 21 - NTOF OF SYSTEM 3 - HYDRAULICS/PNEUMATICS
69 ; 22 - NTOF OF SYSTEM 4 - AIRFRAME(INCLUDES STRUTS AND TIRES)
70 ; 23 - NTOF OF SYSTEM 5 - COMM/NAV/INSTRUMENTS/RADAR
71 ; 24 - NTOF OF SYSTEM 6 - FIRE CONTROL/WEAPONS RELEASE
72 ; 25 - CARRIES MARK TIME FOR TURNAROUND STATISTICS DAY 1
73 ; 26 - CARRIES MARK TIME FOR TURNAROUND STATISTICS DAY 2
74 ; 27 - CARRIES MARK TIME FOR TURNAROUND STATISTICS DAY 3
75 ; 28 - TOTAL MINUTES ENGINE RUN TIME DAY 1
76 ; 29 - TOTAL MINUTES ENGINE RUN TIME DAY 2
77 ; 30 - TOTAL MINUTES ENGINE RUN TIME DAY 3
78 ;
79 ; PILOT ATTRIBUTES
80 ;
81 ; 1 - SQ ID NUMBER (1-6)
82 ; 2 - PILOT ID NUMBER
83 ; 3 - PILOT STATUS, 0-PILOT, 1- FLIGHT LEAD (NON-QRA QUALIFIED),
84 ; 2- FLIGHT LEAD (QRA QUALIFIED), 3- FLIGHT LEAD ON QRA
85 ; 4 - # SORTIES ON DAY 1
86 ; 5 - # SORTIES ON DAY 2
87 ; 6 - # SORTIES ON DAY 3
88 ; 7 - MARK TIME FOR FLYING TIME DAY 1
89 ; 8 - MARK TIME FOR FLYING TIME DAY 2
90 ; 9 - MARK TIME FOR FLYING TIME DAY 3
91 ; 10 - CARRIES MARK TIME FOR PILOT GROUND TIME STATISTICS
92 ; FOR TIME BETWEEN ENGINE SHUT DOWN AND NEXT TIME
93 ; A PREFLIGHT IS BEGUN DAY1
94 ; 11 - MARK TIME FOR PILOT GROUND TIME DAY 2
95 ; 12 - MARK TIME FOR PILOT GROUND TIME DAY 3
96 ;
97 ; MISSION ATTRIBUTES
98 ;
99 ; 43 - FLIGHT AIRCREW COMPOSITION, CASE I - 1 FLT LEAD, CASE II -
100 ; 2 FLT LEADS, CASE III - 3 FLT LEADS (THE SECOND FLT LEAD
101 ; IN CASE II IS ALWAYS IN THE NUMBER 3 AIRCRAFT)
102 ; 44 - NUMBER OF AIRCRAFT IN THE FLIGHT (2 OR 3)(2 MINIMUM)
103 ; 45 - AIRCRAFT POSITION IN THE FLIGHT (1 OR LEAD, 2, OR 3, WITH A
104 ; FLIGHT LEAD IN POSITION 1 AT ALL TIMES)
105 ; 46 - MISSION NUMBER (COUNTER GOES FROM 1 TO 46 THEN RECYCLES
106 ; FROM 1 TO 46)
107 ; 47 - AREA TO WHICH MISSION IS SENT, 1- CLOSE, LO-LO-LO PROFILE,
108 ; 2- FURTHER, LO-LO-HIGH, 3- FARTHEST, HIGH-LO-HIGH
109 ; 48 - ALWAYS ZERO, USED TO MATCH PILOTS WITH A/C
110 ;
111 ;
112 ; THE MAXIMUM NUMBER OF ENTRIES IN ALL FILES (MNTRY) SPECIFIED AS
113 ; 506 PROVIDES A SAFETY MARGIN FOR THE WORST CASE THE MODEL SHOULD
114 ; ENCOUNTER WITH 6 SQUADRONS OF 16 UE AIRCRAFT.
115 ;
116 GEN,TESTFIN,MANN & SHOOK 91 AFIT,1/7/82,1;

117
118

LIMITS,99,48,506;
;

119	;	NUMBERED ACTIVITIES
120	;	STATISTICS ARE COLLECTED ON THE FOLLOWING ACTIVITIES-
121	;	
122	;	1 - RECONFIGURATION
123	;	2 - REARMING
124	;	3 - MX POST-FLIGHT
125	;	4 - HOTPIT REFUELING
126	;	5 - SHELTER REFUELING
127	;	6 - TRUCK REFUELING
128	;	7 - WGSHP1 SERVICE
129	;	8 - WGSHP2 SERVICE
130	;	9 - WGSHP3 SERVICE
131	;	10 - WGSHP4 SERVICE
132	;	11 - MMT1 SERVICE
133	;	12 - MMT2 SERVICE
134	;	13 - MMT3 SERVICE
135	;	14 - MMT4 SERVICE
136	;	15 - MMT5 SERVICE
137	;	16 - MMT6 SERVICE
138	;	17 - SQ11 MX SERVICE
139	;	18 - SQ12 MX SERVICE
140	;	19 - SQ13 MX SERVICE
141	;	20 - SQ14 MX SERVICE
142	;	21 - SQ21 MX SERVICE
143	;	22 - SQ22 MX SERVICE
144	;	23 - SQ23 MX SERVICE
145	;	24 - SQ24 MX SERVICE
146	;	25 - SQ31 MX SERVICE
147	;	26 - SQ32 MX SERVICE
148	;	27 - SQ33 MX SERVICE
149	;	28 - SQ34 MX SERVICE
150	;	29 - SQ41 MX SERVICE
151	;	30 - SQ42 MX SERVICE
152	;	31 - SQ43 MX SERVICE
153	;	32 - SQ44 MX SERVICE
154	;	33 - SQ51 MX SERVICE
155	;	34 - SQ52 MX SERVICE
156	;	35 - SQ53 MX SERVICE
157	;	36 - SQ54 MX SERVICE
158	;	37 - SQ61 MX SERVICE
159	;	38 - SQ62 MX SERVICE
160	;	39 - SQ63 MX SERVICE
161	;	40 - SQ64 MX SERVICE
162	;	41 - NORMAL PREFLIGHT
163	;	42 - DELAYED PREFLIGHT
164	;	43 - NORMAL TMA3
165	;	44 - DELAYED TMA3
166	;	45 - NORMAL TMA2
167	;	46 - DELAYED TMA2
168	;	47 - DEARM SERVICE AT DEAR

169	;	48 - DEARM SERVICE AT DEAS
170	;	49 - DOWNLOAD ORDNANCE AT WING MAINTENANCE.
171	;	50 - DOWNLOAD ORDNANCE FOR MMT MAINTENANCE.
172	;	

173	;	FILE ASSIGNMENTS
174	;	
175	;	
176	;	1 - 18 -- A/C READY POOL, PILOT READY POOL & MATCH Q'S (PER SQDN)
177	;	19 - 20 -- QRA A/C AND PILOTS
178	;	21 -- AWAIT MXTEAM (PREFLIGHT)
179	;	22 - 44 -- MATCH Q'S FOR LAUNCH PROCESS
180	;	45 - 46 -- AWAIT RUNWAY (TAKEOFF)
181	;	47 -- AWAIT RUNWAY (LANDING)
182	;	48 - 49 -- AWAIT DEARMING
183	;	50 -- AWAIT HOTPIT REFUELING
184	;	51 -- AWAIT MXTEAM (TURNAROUND SERVICE)
185	;	52 -- AWAIT REARMING
186	;	53 -- AWAIT FUEL TRUCK
187	;	54 -- GATE TO CLOSE IF OUT OF FUEL
188	;	55 - 57 -- MATCH AFTER TURNAROUND SERVICING
189	;	58 - 61 -- WING MX SHOPS
190	;	62 -- WING MX QUEUE
191	;	63 - 68 -- MNT MX UNIT
192	;	69 -- MNT MX QUEUE
193	;	70 - 73 -- SQDN 1 MX SHOPS
194	;	74 - 77 -- SQDN 2 MX SHOPS
195	;	78 - 81 -- SQDN 3 MX SHOPS
196	;	82 - 85 -- SQDN 4 MX SHOPS
197	;	86 - 89 -- SQDN 5 MX SHOPS
198	;	90 - 93 -- SQDN 6 MX SHOPS
199	;	94 - 97 -- MATCH AFTER SQDN MX SERVICE
200	;	98 -- AWAIT MXTEAM (MX CONTROL)
201	;	99 -- JUNK FILE (A/C ATTRITED, CRASHED, OR SCRAPPED)
202	;	

```

203      ; GLOBAL VARIABLE ASSIGNMENTS
204      ;
205      ;
206      ; 1 - MISSION VARIABLES
207      ;
208      ;     XX(1)... XX(46) - MISSION STATUS (USED TO DETERMINE CURRENT MAIN-
209      ;     TENANCE STATUS OF A/C IN A PARTICULAR FLIGHT DURING START,
210      ;     TMA, TAKEOFF, AND REJOIN. USED TO ASSIGN MISSION DURA-
211      ;     TION TO EACH A/C IN A PARTICULAR FLIGHT (WHILE AIRBORNE).
212      ;     XX(47) - MISSION NUMBER (SET BY SCHEDULER).
213      ;     XX(48) - REQUIRED EXTERNAL TANK CONFIGURATION (SET BY SCHEDULER).
214      ;     XX(49) - MISSION CREW COMPOSITION (SET BY ORGNPT).
215      ;     XX(97) - AREA MISSION IS GOING TO (SET BY SCHEDULER).
216      ;
217      ; 2 - CREATION VARIABLES
218      ;
219      ;     XX(56) - A/C CREATION COUNTER
220      ;     XX(57) - NUMBER OF A/C TO BE CREATED PER SQUADRON.
221      ;     XX(58) - NUMBER OF PILOTS TO BE CREATED PER SQUADRON.
222      ;     XX(59) - INITIAL CONFIGURATION
223      ;     XX(61) - NUMBER OF PILOT/AIRCRAFT ON QRA
224      ;     XX(62) - NUMBER OF QRA QUALIFIED PILOTS/SQUADRON
225      ;     XX(63) - NUMBER OF FLIGHT LEAD QUALIFIED PILOTS/SQUADRON
226      ;     XX(64) - PERCENT OF A/C INITIALLY OPERATIONAL
227      ;     XX(70) - PILOT ID NUMBER COUNTER
228      ;     XX(71) - PILOT STATUS COUNTER
229      ;     XX(72) - A/C TAIL NUMBER COUNTER
230      ;     XX(73) - A/C FLIGHT POSITION COUNTER (RESET TO ZERO BY SCHEDULER).
231      ;     XX(74)... XX(79) - A/C QRA STATUS COUNTERS, SQ1 THRU SQ6.
232      ;
233      ; 3 - OPERATIONAL VARIABLES
234      ;
235      ;     XX(65) - PROBABILITY OF A/C DELAY AT PILOT PREFLIGHT
236      ;     XX(66) - PROBABILITY OF A/C DELAY AT START
237      ;     XX(67) - PROBABILITY OF A/C DELAY AT TMA
238      ;     XX(68) - PROBABILITY OF FLT DELAY AT TAKEOFF
239      ;     XX(69) - PROBABILITY OF A/C DELAY AT REJOIN
240      ;
241      ; 4 - NETWORK VARIABLES
242      ;
243      ;     XX(50)... XX(55) - RESUPPLY REQUEST, SQ1 THRU SQ6
244      ;     XX(80)... XX(91) - PILOT/AIRCRAFT FORMATION
245      ;     XX(92) - MISSION FLIGHT TIME
246      ;     XX(93) - MMT POOL SWITCH
247      ;     XX(95) - DUMMY VARIABLE FOR FUNCTION CALLS
248      ;     XX(96) - EXECUTIVE NETWORK SWITCH
249      ;     XX(98) - MASTER CLOCK DELAY TIME
250      ;
251      ; 5 - RESPONSE VARIABLE
252      ;

```

253	:	XX(94) - TOTAL EFFECTIVE SORTIES FLOWN
254	:	
255	:	6 - OTHER VARIABLES
256	:	
257	:	XX(60) - INITIAL POL SUPPLY
258	:	XX(99) - UNUSED
259	:	XX(100)- COUNTER FOR NUMBER OF A/C EXPERIENCING A MX FAILURE.
260	:	

```

261      ; MAINTENANCE PRIORITY PROCESSING
262      ;   THE PROCESSING OF A/C IN MAINTENANCE IS BASED ON LOW
263      ;   VALUE FIRST OF ATTRIBUTE 17. THE WAY THE VALUE IS COMPUTED
264      ;   IS EXPLAINED IN THE MAINTENANCE SECTIONS.
265      ;
266      PRIORITY/62,LVF(17);
267      PRIORITY/69,LVF(17);
268      PRIORITY/70,LVF(17);
269      PRIORITY/71,LVF(17);
270      PRIORITY/72,LVF(17);
271      PRIORITY/73,LVF(17);
272      PRIORITY/74,LVF(17);
273      PRIORITY/75,LVF(17);
274      PRIORITY/76,LVF(17);
275      PRIORITY/77,LVF(17);
276      PRIORITY/78,LVF(17);
277      PRIORITY/79,LVF(17);
278      PRIORITY/80,LVF(17);
279      PRIORITY/81,LVF(17);
280      PRIORITY/82,LVF(17);
281      PRIORITY/83,LVF(17);
282      PRIORITY/84,LVF(17);
283      PRIORITY/85,LVF(17);
284      PRIORITY/86,LVF(17);
285      PRIORITY/87,LVF(17);
286      PRIORITY/88,LVF(17);
287      PRIORITY/89,LVF(17);
288      PRIORITY/90,LVF(17);
289      PRIORITY/91,LVF(17);
290      PRIORITY/92,LVF(17);
291      PRIORITY/93,LVF(17);
292      ;

```

```

293      ; RESOURCE INITIALIZATION
294      ; EACH RESOURCE IS SET TO ITS INITIAL CAPACITY AND THE PRIORITY
295      ; FOR USERS IS SPECIFIED BY THE FILE NUMBER ORDER. FOR EXAMPLE,
296      ; MXTEAM(96),21,51,98 SPECIFIES 96 CREW CHIEFS AVAILABLE WITH PRI-
297      ; ORITY TO PREFLIGHT, THEN ENGINE SHUT DOWN AND FINALLY AN ALLOCA-
298      ; TION AT MAINTENANCE CONTROL.
299      ;
300      NETWORK;
301      RESOURCE/WGSHOP1(0),58;
302      RESOURCE/WGSHOP2(0),59;
303      RESOURCE/WGSHOP3(0),60;
304      RESOURCE/WGSHOP4(0),61;
305      RESOURCE/MMT1(0),63;
306      RESOURCE/MMT2(0),64;
307      RESOURCE/MMT3(0),65;
308      RESOURCE/MMT4(0),66;
309      RESOURCE/MMT5(0),67;
310      RESOURCE/MMT6(0),68;
311      RESOURCE/MXTEAM(0),21,51,98;
312      RESOURCE/SQ1MX1(0),70;
313      RESOURCE/SQ1MX2(0),71;
314      RESOURCE/SQ1MX3(0),72;
315      RESOURCE/SQ1MX4(0),73;
316      RESOURCE/SQ2MX1(0),74;
317      RESOURCE/SQ2MX2(0),75;
318      RESOURCE/SQ2MX3(0),76;
319      RESOURCE/SQ2MX4(0),77;
320      RESOURCE/SQ3MX1(0),78;
321      RESOURCE/SQ3MX2(0),79;
322      RESOURCE/SQ3MX3(0),80;
323      RESOURCE/SQ3MX4(0),81;
324      RESOURCE/SQ4MX1(0),82;
325      RESOURCE/SQ4MX2(0),83;
326      RESOURCE/SQ4MX3(0),84;
327      RESOURCE/SQ4MX4(0),85;
328      RESOURCE/SQ5MX1(0),86;
329      RESOURCE/SQ5MX2(0),87;
330      RESOURCE/SQ5MX3(0),88;
331      RESOURCE/SQ5MX4(0),89;
332      RESOURCE/SQ6MX1(0),90;
333      RESOURCE/SQ6MX2(0),91;
334      RESOURCE/SQ6MX3(0),92;
335      RESOURCE/SQ6MX4(0),93;
336      RESOURCE/REARM(0),52;
337      RESOURCE/REFUEL(0),53;
338      RESOURCE/DEARM(0),48,49;
339      RESOURCE/RUNWAY(0),47,45,46;
340      RESOURCE/HOTFIT(0),50;
341      ;

```

```

342      ; GATE INITIALIZATION
343      ;   EACH GATE HAS AN INITIAL POSITION, OPEN OR CLOSED. GATES ARE USED
344      ;   TO KEEP AIRCRAFT IN AN AWAIT NODE UNTIL THE OCCURENCE OF SOME EVENT
345      ;   WHICH MEANS THEY COULD POSSIBLY ACQUIRE A RESOURCE THEY NEED -- AT
346      ;   THAT POINT AN OPEN GATE NODE IS USED TO ALLOW THE AIRCRAFT TO FLOW
347      ;   ON. IN THE CASE OF FUEL THE GATE IS INITIALLY OPEN AND IT IS CLOSED
348      ;   WHEN THE FUEL SUPPLY IS EXHAUSTED.
349      ;
350      GATE/JUNK,CLOSE,99;
351      GATE/FUELAVAL,OPEN,54;
352      GATE/MMTPOOL,OPEN,69;
353      GATE/WCPPOOL,OPEN,62;
354      GATE/RDYPPOOL1,CLOSE,1;
355      GATE/RDYPPOOL2,CLOSE,4;
356      GATE/RDYPPOOL3,CLOSE,7;
357      GATE/RDYPPOOL4,CLOSE,10;
358      GATE/RDYPPOOL5,CLOSE,13;
359      GATE/RDYPPOOL6,CLOSE,16;
360      GATE/QRAPOOL,CLOSE,19;
361      GATE/PILOTQRA,CLOSE,20;
362      ;

```

```

363      ; AIRCRAFT AND PILOT CREATION
364      ;   AIRCRAFT ARE CREATED AT TIME 0. IF RESUPPLY IS REQUIRED (REPLACE-
365      ;   MENT SQUADRONS), ADDITIONAL AIRCRAFT ARE CREATED ON DAY 2 AND DAY
366      ;   3. THE USER CAN SPECIFY THE NUMBER OF AIRCRAFT TO BE USED FOR
367      ;   EACH SQUADRON (UE) IN THE FORTRAN CODE (MAX OF 50). THIS NUMBER
368      ;   APPLIES TO ALL SQUADRONS AND TO ALL REPLACEMENT SQUADRONS SCHEDULED BY
369      ;   SUBROUTINE RESUPPLY. THE DECISION TO RESUPPLY IS MADE BY THE
370      ;   PROGRAM BASED ON THE NUMBER OF AIRCRAFT THE USER SPECIFIES
371      ;   FOR LIMITAC. THIS IS THE MINIMUM NUMBER OF OPERATIONAL A/C
372      ;   AT WHICH THE USER FEELS THE SQUADRON CAN FUNCTION EFFECTIVELY.
373      ;   THE TIME OF RESUPPLY CAN BE ALTERED. CURRENTLY, REPLACEMENT
374      ;   SQUADRONS ARE SCHEDULED TO ARRIVE AT 1800.0 MINUTES AND 3240.0
375      ;   MINUTES INTO THE RUN (MID-DAY THE FOLLOWING DAY), IF REQUIRED.
376      ;   THE INITIAL AIRCRAFT ARE PROCESSED DIRECTLY THROUGH THE NODES
377      ;   IN THIS SECTION. THEY GET THEIR INITIAL VALUES SET IN THIS
378      ;   AREA. FOR EXAMPLE, NTOF FOR EACH OF THE SIX SYSTEMS BASED ON
379      ;   A PROBABILISTIC DRAW FROM A DISTRIBUTION BASED ON THE MEAN TIME
380      ;   BETWEEN FAILURE (MTBF) FOR THAT SYSTEM. A UNIQUE TAIL NUMBER IS
381      ;   ASSIGNED AS WELL AS A SQUADRON NUMBER AND A PARKING SPACE. AIR-
382      ;   CRAFT WHICH DON'T REQUIRE MAINTENANCE INITIALLY GO ON QUICK
383      ;   REACTION ALERT (QRA) OR TO THE READY POOL. THE NUMBER WHICH GO
384      ;   ON QRA IS USER SELECTABLE IN THE FORTRAN. THE PERCENTAGE OF A/C
385      ;   INITIALLY OPERATIONALLY READY (OR) IS USER SELECTABLE. THOSE A/C
386      ;   NOT INITIALLY OR GO TO MX.
387      ;   REPLACEMENT SQUADRON AIRCRAFT GO THROUGH THE SAME INITIAL
388      ;   ASSIGNMENT ROUTINE BUT ARE THEN BRANCHED THROUGH RESC TO
389      ;   PICK UP A PILOT BEFORE GOING TO APPROACH FOR LANDING.
390      ;   THE INITIAL NUMBER OF PILOTS AND THEIR QUALIFICATIONS (FLIGHT
391      ;   LEAD/QRA QUALIFIED) IS USER SPECIFIED FOR UP TO 75 PILOTS PER
392      ;   SQUADRON.
393      ;   WHEN A MISSION IS SCHEDULED, SCHEDULER WILL OPEN THE READY POOL
394      ;   GATE IF ENOUGH AIRCRAFT ARE IN THE READY POOL TO FORM A FLIGHT.
395      ;   THREE AIRCRAFT OF THE CORRECT CONFIGURATION ARE ASSIGNED TO A
396      ;   PARTICULAR MISSION NUMBER AND A PILOT OF PROPER QUALIFICATION
397      ;   IS SCHEDULED AGAINST THE AIRCRAFT. MISSION ATTRIBUTES ARE SET.
398      ;   THE AIRCRAFT AND PILOT THEN PROCEED TO PILOT PREFLIGHT.
399      ;
400      ;
401      ;
402      ;
403      CREATE,0,0,50,1;
404      ACT,,XX(50).EQ.1,NAL1;
405      ACT,,XX(50).EQ.0,TERM;
406      CREATE,0,1800,50,1;
407      ACT,,XX(50).EQ.1,NAL1;
408      ACT,,XX(50).EQ.0,TERM;
409      CREATE,0,3240,50,1;
410      ACT,,XX(50).EQ.1,NAL1;
411      ACT,,XX(50).EQ.0,TERM;
412      ;

```

SQ1 A/C GENERATION ROUTINE

INITIAL A/C GENERATION FOR SQ1

IF DAY02 REPLACEMENT SQ1 REQUIRED

IF DAY03 REPLACEMENT SQ1 REQUIRED

```

413      NAL1 ASSIGN,XX(56)=XX(56)+1,1;
414      ACT,,XX(56).GT.XX(57).AND.
415      TNOW.LT.0.1,TERM;
416      ACT,,XX(56).GT.XX(57),RESC;
417      ACT,,,ASQ1;
418      ;
419      ;
420      ASQ1 ASSIGN,XX(72)=XX(72)+1,
421      ATRIB(26)=0,ATRIB(27)=0,
422      ATRIB(1)=1, ATRIB(2)=USERF(18),
423      ATRIB(7)=USERF(137),
424      ATRIB(12)=XX(59),ATRIB(14)=0,ATRIB(15)=0,
425      ATRIB(16)=0,ATRIB(17)=0,ATRIB(18)=0;
426      ;
427      ;
428      ;
429      ASSIGN,
430      ATRIB(4)=0, ATRIB(5)=0, ATRIB(6)=0,
431      ATRIB(28)=0,ATRIB(29)=0,ATRIB(30)=0,
432      ATRIB(19)=USERF(131),ATRIB(20)=USERF(132),
433      ATRIB(21)=USERF(133),ATRIB(22)=USERF(134),
434      ATRIB(23)=USERF(135),ATRIB(24)=USERF(136),1;
435      ACT,,XX(50).EQ.1.AND.
436      TNOW.GT.0.1,RESC;
437      ACT,,DRAND.GT.XX(64),MXIS;
438      ACT,,,ASC1;
439      ;
440      ;
441      ASC1 ASSIGN,ATRIB(3)=USERF(21),
442      ATRIB(9)=1, ATRIB(10)=1,ATRIB(11)=0,
443      XX(74)=XX(74)+1,1;
444      ACT,,XX(74).LE.XX(61),QRA;
445      ACT,,XX(74).GT.XX(61);
446      ;
447      ;
448      ;
449      ;
450      ;
451      ;
452      ;
453      ;
454      ARP1 AWAIT(1),RDYPOOL1,1;
455      ACT,,ATRIB(12).NE.XX(48),GA11;
456      ACT,,ATRIB(12).EQ.XX(48),ACC1;
457      GA11 CLOSE,RDYPPOOL1,1;
458      ACT,,,ARP1;
459      ;
460      ACC1 ASSIGN,XX(73)=XX(73)+1,
461      ATRIB(43)=XX(49),ATRIB(44)=3,
462      ATRIB(45)=XX(73),ATRIB(46)=XX(47),

```

```

463             ATRIB(47)=XX(97),1;          ASSIGN MISSION INFO
464             ACT,,XX(73).GT.3,ARP1;        RETURN REST TO READY POOL
465             ACT,,XX(73).LE.3,GAT1;
466             ;
467             GAT1 CLOSE,RDYPPOOL1,1;
468             ACT,,,ACS1;                    TO MATCH WITH PILOT
469             ;
470             ;
471             ;
472             ACS1 QUEUE(3),,,,APM1;         TO MATCH OF A/C & PILOTS
473             ;
474             ;
475             ;
476             ;
477             CREATE,0,0,75,1;              INITIAL PILOT GENERATION FOR SQ1
478             ACT,,XX(50).EQ.1,ASP1;
479             ACT,,XX(50).EQ.0,TERM;
480             ;
481             ;
482             ;
483             ASP1 ASSIGN,XX(70)=XX(70)+1,XX(71)=XX(71)+1,
484                     ATRIB(1)=1,ATRI(2)=XX(70),
485                     ATRIB(3)=USERF(11),
486                     ATRIB(4)=0,ATRI(5)=0,
487                     ATRIB(6)=0,ATRI(11)=0,
488                     ATRIB(12)=0,
489                     ATRIB(8)=0,ATRI(9)=0,1;
490             ACT,,XX(71).EQ.75,QA1;
491             ACT,,XX(71).LE.XX(61),PQRP;
492             ACT,,XX(71).LE.XX(58),PL1;
493             ACT,,,TERM;
494             ;
495             QA1 ASSIGN,XX(71)=0,XX(56)=0,1; AUTO RESET OF COUNTER
496             ACT,,XX(58).EQ.75,PL1;
497             ACT,,,TERM;
498             ;
499             ;
500             PL1 QUEUE(2),,,,APM1;         TO A/C/PILOT MATCH
501             ;
502             APM1 MATCH,48,PL1/APLT,ACS1/ASAC; ASSIGN A/C TO PILOTS
503             ;
504             ;
505             ;
506             ;
507             ;
508             ;
509             ;
510             ;
511             CREATE,0,0001,50,1;          INITIAL A/C GENERATION FOR SQ2
512             ACT,,XX(51).EQ.1,NAL2;

```

```

513             ACT,,XX(51).EQ.0,TERM;
514 CREATE,0,1800.0001,,50,1;           IF DAY02 REPLACEMENT SQ2 REQUIRE
515             ACT,,XX(51).EQ.1,NAL2;
516             ACT,,XX(51).EQ.0,TERM;
517 CREATE,0,3240.0001,,50,1;           IF DAY03 REPLACEMENT SQ2 REQUIRE
518             ACT,,XX(51).EQ.1,NAL2;
519             ACT,,XX(51).EQ.0,TERM;
520 ;
521 NAL2 ASSIGN,XX(56)=XX(56)+1,1;
522             ACT,,XX(56).GT.XX(57).AND.
523             TNOW.LT.0.1,TERM;
524             ACT,,XX(56).GT.XX(57),RESC;
525             ACT,,ASC2;
526 ;
527 ;
528 ASQ2 ASSIGN,XX(72)=XX(72)+1,
529             ATRIB(26)=0,ATRI(27)=0,
530             ATRIB(1)=2, ATRIB(2)=USERF(18),
531             ATRIB(7)=USERF(137),
532             ATRIB(12)=XX(59),ATRI(14)=0,ATRI(15)=0,
533             ATRIB(16)=0,ATRI(17)=0,ATRI(18)=0;
534 ;
535 ;
536 ;
537 ASSIGN,
538             ATRIB(4)=0, ATRIB(5)=0, ATRIB(6)=0,
539             ATRIB(28)=0,ATRI(29)=0,ATRI(30)=0,
540             ATRIB(19)=USERF(131),ATRI(20)=USERF(132),
541             ATRIB(21)=USERF(133),ATRI(22)=USERF(134),
542             ATRIB(23)=USERF(135),ATRI(24)=USERF(136),1;
543             ACT,,XX(51).EQ.1.AND.
544             TNOW.GT.0.1,RESC;           REPLACEMENT A/C
545             ACT,,DRAND.GT.XX(64),MXIS;   A/C IN MAINT INITIALLY
546             ACT,,ASC2;                   GENERATED OPERATIONAL A/C
547 ;
548 ;
549 ASC2 ASSIGN,ATRI(3)=USERF(21),
550             ATRIB(9)=1, ATRIB(10)=1,ATRI(11)=0,
551             XX(75)=XX(75)+1,1;
552             ACT,,XX(75).LE.XX(61),QRA;   SELECT QRA A/C (FIRST TIME ONLY)
553             ACT,,XX(75).GT.XX(61);       OPERATIONAL AIRCRAFT
554 ;
555 ;
556 ;
557 ;
558 ;
559 ;
560 ;
561 ;
562 ARP2 AWAIT(4),RDYPOOL2,1;           READY POOL SQ2

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563             ACT,,ATRIB(12).NE.XX(48),GA12; IF WRONG CONFIG, RETURN TO RDYPOOL
564             ACT,,ATRIB(12).EQ.XX(48),ACC2;
565             GA12 CLOSE,RDYP00L2,1;
566             ACT,,ARP2;
567             ;
568             ACC2 ASSIGN,XX(73)=XX(73)+1,
569                 ATRIB(43)=XX(49),ATRIB(44)=3,
570                 ATRIB(45)=XX(73),ATRIB(46)=XX(47),
571                 ATRIB(47)=XX(97),1;          ASSIGN MISSION INFO
572             ACT,,XX(73).GT.3,ARP2;          RETURN REST TO READY POOL
573             ACT,,XX(73).LE.3,GAT2;
574             ;
575             GAT2 CLOSE,RDYP00L2,1;
576             ACT,,ACS2;                      TO MATCH WITH PILOT
577             ;
578             ;
579             ;
580             ACS2 QUEUE(6),,,,APM2;          TO MATCH OF A/C & PILOTS
581             ;
582             ;
583             ;
584             ;
585             CREATE,0,.0001,.75,1;          INITIAL PILOT GENERATION FOR SQ2
586             ACT,,XX(51).EQ.1,ASP2;
587             ACT,,XX(51).EQ.0,TERM;
588             ;
589             ;
590             ;          PILOT ID (SQ, ID#) AND
591             ;          PILOT ACTIVITY STATISTICS.
592             ASP2 ASSIGN,XX(70)=XX(70)+1,XX(71)=XX(71)+1,
593                 ATRIB(1)=2,ATRIB(2)=XX(70),
594                 ATRIB(3)=USERF(11),
595                 ATRIB(4)=0,ATRIB(5)=0,
596                 ATRIB(6)=0,ATRIB(11)=0,
597                 ATRIB(12)=0,
598                 ATRIB(8)=0,ATRIB(9)=0,1;
599             ACT,,XX(71).EQ.75,QA2;
600             ACT,,XX(71).LE.XX(61),PQRP;
601             ACT,,XX(71).LE.XX(58),PL2;
602             ACT,,TERM;
603             ;
604             QA2 ASSIGN,XX(71)=0,XX(56)=0,1;          AUTO RESET OF COUNTER.
605             ACT,,XX(58).EQ.75,PL2;
606             ACT,,TERM;
607             ;
608             ;
609             PL2 QUEUE(5),,,,APM2;          TO A/C/PILOT MATCH
610             ;
611             APM2 MATCH,48,PL2/APLT,ACS2/ASAC;          ASSIGN A/C TO PILOTS
612             ;

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```

613 ;
614 ;
615 ;
616 ; SQ3 A/C GENERATION ROUTINE
617 ;
618 ;
619 CREATE,0,0002,50,1; INITIAL A/C GENERATION FOR SQ3
620 ACT,,XX(52).EQ.1,NAL3;
621 ACT,,XX(52).EQ.0,TERM;
622 CREATE,0,1800.0002,50,1; IF DAY02 REPLACEMENT SQ3 REQUIRE
623 ACT,,XX(52).EQ.1,NAL3;
624 ACT,,XX(52).EQ.0,TERM;
625 CREATE,0,3240.0002,50,1; IF DAY03 REPLACEMENT SQ3 REQUIRE
626 ACT,,XX(52).EQ.1,NAL3;
627 ACT,,XX(52).EQ.0,TERM;
628 ;
629 NAL3 ASSIGN,XX(56)=XX(56)+1,1;
630 ACT,,XX(56).GT.XX(57).AND.
631 TNOW.LT.0.1,TERM;
632 ACT,,XX(56).GT.XX(57),RESC;
633 ACT,,,ASQ3;
634 ; A/C IDENTIFICATION (SQ, TAIL #)
635 ; AND STATUS CODES.
636 ASQ3 ASSIGN,XX(72)=XX(72)+1,
637 ATRIB(26)=0, ATRIB(27)=0,
638 ATRIB(1)=3, ATRIB(2)=USERF(18),
639 ATRIB(7)=USERF(137),
640 ATRIB(12)=XX(59), ATRIB(14)=0, ATRIB(15)=0,
641 ATRIB(16)=0, ATRIB(17)=0, ATRIB(18)=0;
642 ;
643 ; A/C STATISTICS AND
644 ; NEXT TIME OF FAILURE, BY SYSTEM.
645 ASSIGN,
646 ATRIB(4)=0, ATRIB(5)=0, ATRIB(6)=0,
647 ATRIB(28)=0, ATRIB(29)=0, ATRIB(30)=0,
648 ATRIB(19)=USERF(131), ATRIB(20)=USERF(132),
649 ATRIB(21)=USERF(133), ATRIB(22)=USERF(134),
650 ATRIB(23)=USERF(135), ATRIB(24)=USERF(136), 1;
651 ACT,,XX(52).EQ.1.AND.
652 TNOW.GT.0.1,RESC; REPLACEMENT A/C
653 ACT,,DRAND.GT.XX(64),MXIS; A/C IN MAINT INITIALLY
654 ACT,,,ASC3; GENERATED OPERATIONAL A/C
655 ;
656 ; INITIALIZE CONFIGURATION
657 ASC3 ASSIGN, ATRIB(3)=USERF(21),
658 ATRIB(9)=1, ATRIB(10)=1, ATRIB(11)=0,
659 XX(76)=XX(76)+1, 1;
660 ACT,,XX(76).LE.XX(61),QRA; SELECT QRA A/C (FIRST TIME ONLY)
661 ACT,,XX(76).GT.XX(61); OPERATIONAL AIRCRAFT
662 ;

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```

663      ;
664      ;
665      ;
666      ; FORM A FLIGHT OF THREE
667      ;
668      ; GATE OPENED BY SCHEDULER
669      ;
670      ARP3 AWAIT(7),RDYPOOL3,1; READY POOL SQ3
671      ACT,,ATRIB(12).NE.XX(48),GA13; IF WRONG CONFIG, RETURN TO RDYPOOL
672      ACT,,ATRIB(12).EQ.XX(48),ACC3;
673      GA13 CLOSE,RDYPPOOL3,1;
674      ACT,,ARP3;
675      ;
676      ACC3 ASSIGN,XX(73)=XX(73)+1,
677      ATRIB(43)=XX(49),ATRIB(44)=3,
678      ATRIB(45)=XX(73),ATRIB(46)=XX(47),
679      ATRIB(47)=XX(97),1; ASSIGN MISSION INFO
680      ACT,,XX(73).GT.3,ARP3; RETURN REST TO READY POOL
681      ACT,,XX(73).LE.3,GAT3;
682      ;
683      GAT3 CLOSE,RDYPPOOL3,1;
684      ACT,,ACS3; TO MATCH WITH PILOT
685      ;
686      ;
687      ;
688      ACS3 QUEUE(9),,,,APM3; TO MATCH OF A/C & PILOTS
689      ;
690      ;
691      ;
692      ;
693      CREATE,0,.0002,,75,1; INITIAL PILOT GENERATION FOR SQ3
694      ACT,,XX(52).EQ.1,ASP3;
695      ACT,,XX(52).EQ.0,TERM;
696      ;
697      ; PILOT ID (SQ, ID#) AND
698      ; PILOT ACTIVITY STATISTICS.
699      ASP3 ASSIGN,XX(70)=XX(70)+1,XX(71)=XX(71)+1,
700      ATRIB(1)=3,ATRIB(2)=XX(70),
701      ATRIB(3)=USERF(11),
702      ATRIB(4)=0,ATRIB(5)=0,
703      ATRIB(6)=0,ATRIB(11)=0,
704      ATRIB(12)=0,
705      ATRIB(8)=0,ATRIB(9)=0,1;
706      ACT,,XX(71).EQ.75,QA3;
707      ACT,,XX(71).LE.XX(61),PQRP;
708      ACT,,XX(71).LE.XX(58),PL3;
709      ACT,,TERM;
710      ;
711      QA3 ASSIGN,XX(71)=0,XX(56)=0,1; AUTO RESET OF COUNTER
712      ACT,,XX(58).EQ.75,PL3;

```

```

713             ACT,,,TERM;
714             ;
715             ;
716             PL3 QUEUE(8),,,,APM3;                TO A/C/PILOT MATCH
717             ;
718             APM3 MATCH,48,PL3/APLT,ACS3/ASAC;      ASSIGN A/C TO PILOTS
719             ;
720             ;
721             ;
722             ;
723             ;
724             ;                                SQ4 A/C GENERATION ROUTINE
725             ;
726             ;
727             CREATE,0,.0003,,50,1;                INITIAL A/C GENERATION FOR SQ4
728             ACT,,XX(53).EQ.1,NAL4;
729             ACT,,XX(53).EQ.0,TERM;
730             CREATE,0,1800.0003,,50,1;            IF DAY02 REPLACEMENT SQ4 REQUIRE
731             ACT,,XX(53).EQ.1,NAL4;
732             ACT,,XX(53).EQ.0,TERM;
733             CREATE,0,3240.0003,,50,1;            IF DAY03 REPLACEMENT SQ4 REQUIRE
734             ACT,,XX(53).EQ.1,NAL4;
735             ACT,,XX(53).EQ.0,TERM;
736             ;
737             NAL4 ASSIGN,XX(56)=XX(56)+1,1;
738             ACT,,XX(56).GT.XX(57).AND.
739             TNOW.LT.0.1,TERM;
740             ACT,,XX(56).GT.XX(57),RESC;
741             ACT,,,ASQ4;
742             ;                                A/C IDENTIFICATION (SQ, TAIL #)
743             ;                                AND STATUS CODES.
744             ASQ4 ASSIGN,XX(72)=XX(72)+1,
745             ATRIB(26)=0, ATRIB(27)=0,
746             ATRIB(1)=4, ATRIB(2)=USERF(18),
747             ATRIB(7)=USERF(137),
748             ATRIB(12)=XX(59), ATRIB(14)=0, ATRIB(15)=0,
749             ATRIB(16)=0, ATRIB(17)=0, ATRIB(18)=0;
750             ;
751             ;                                A/C STATISTICS AND
752             ;                                NEXT TIME OF FAILURE, BY SYSTEM.
753             ASSIGN,
754             ATRIB(4)=0, ATRIB(5)=0, ATRIB(6)=0,
755             ATRIB(26)=0, ATRIB(29)=0, ATRIB(30)=0,
756             ATRIB(19)=USERF(131), ATRIB(20)=USERF(132),
757             ATRIB(21)=USERF(133), ATRIB(22)=USERF(134),
758             ATRIB(23)=USERF(135), ATRIB(24)=USERF(136), 1;
759             ACT,,XX(53).EQ.1,AND.
760             TNOW.GT.0.1,RESC;                    REPLACEMENT A/C
761             ACT,,DRAND.GT.XX(64),MXIS;            A/C IN MAINT INITIALLY
762             ACT,,,ASC4;                            GENERATED OPERATIONAL A/C

```

```

763      ;
764      ;                               INITIALIZE CONFIGURATION
765      ASC4 ASSIGN, ATRIB(3)=USERF(21),
766      ATRIB(9)=1, ATRIB(10)=1, ATRIB(11)=0,
767      XX(77)=XX(77)+1, 1;
768      ACT,, XX(77).LE.XX(61), QRA;    SELECT QRA A/C (FIRST TIME ONLY)
769      ACT,, XX(77).GT.XX(61);        OPERATIONAL AIRCRAFT
770      ;
771      ;
772      ;
773      ;
774      ;                               FORM A FLIGHT OF THREE
775      ;
776      ;                               GATE OPENED BY SCHEDULER
777      ;
778      ARP4 AWAIT(10), RDYPOOL4, 1;    READY POOL SQ4
779      ACT,, ATRIB(12).NE.XX(48), GA14; IF WRONG CONFIG, RETURN TO RDYPOOL
780      ACT,, ATRIB(12).EQ.XX(48), ACC4;
781      GA14 CLOSE, RDYPOOL4, 1;
782      ACT,, ARP4;
783      ;
784      ACC4 ASSIGN, XX(73)=XX(73) + 1,
785      ATRIB(43)=XX(49), ATRIB(44)=3,
786      ATRIB(45)=XX(73), ATRIB(46)=XX(47),
787      ATRIB(47)=XX(97), 1;           ASSIGN MISSION INFO
788      ACT,, XX(73).GT.3, ARP4;        RETURN REST TO READY POOL
789      ACT,, XX(73).LE.3, GAT4;
790      ;
791      GAT4 CLOSE, RDYPOOL4, 1;
792      ACT,, ACS4;                     TO MATCH WITH PILOT
793      ;
794      ;
795      ;
796      ACS4 QUEUE(12),,,, APM4;        TO MATCH OF A/C & PILOTS
797      ;
798      ;
799      ;
800      ;
801      CREATE, 0, .0003, 75, 1;        INITIAL PILOT GENERATION FOR SQ4
802      ACT,, XX(53).EQ.1, ASP4;
803      ACT,, XX(53).EQ.0, TERM;
804      ;
805      ;                               PILOT ID (SQ, ID#) AND
806      ;                               PILOT ACTIVITY STATISTICS.
807      ASP4 ASSIGN, XX(70)=XX(70)+1, XX(71)=XX(71)+1,
808      ATRIB(1)=4, ATRIB(2)=XX(70),
809      ATRIB(3)=USERF(11),
810      ATRIB(4)=0, ATRIB(5)=0,
811      ATRIB(6)=0, ATRIB(11)=0,
812      ATRIB(12)=0,

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813             ATRIB(8)=0, ATRIB(9)=0, 1;
814             ACT,, XX(71).EQ.75, QA4;
815             ACT,, XX(71).LE.XX(61), PQR;
816             ACT,, XX(71).LE.XX(58), PL4;
817             ACT,,, TERM;
818             ;
819             QA4 ASSIGN, XX(71)=0, XX(56)=0, 1;             AUTO RESET OF COUNTER
820             ACT,, XX(58).EQ.75, PL4;
821             ACT,,, TERM;
822             ;
823             ;
824             PL4 QUEUE(11),,,, APM4;             TO A/C/PILOT MATCH
825             ;
826             APM4 MATCH, 48, PL4/APLT, ACS4/ASAC;             ASSIGN A/C TO PILOTS
827             ;
828             ;
829             ;
830             ;
831             ;
832             ;             SQ5 A/C GENERATION ROUTINE
833             ;
834             ;
835             CREATE, 0, .0004, .50, 1;             INITIAL A/C GENERATION FOR SQ5
836             ACT,, XX(54).EQ.1, NAL5;
837             ACT,, XX(54).EQ.0, TERM;
838             CREATE, 0, 1800.0004, .50, 1;             IF DAY02 REPLACEMENT SQ5 REQUIRE
839             ACT,, XX(54).EQ.1, NAL5;
840             ACT,, XX(54).EQ.0, TERM;
841             CREATE, 0, 3240.0004, .50, 1;             IF DAY03 REPLACEMENT SQ5 REQUIRE
842             ACT,, XX(54).EQ.1, NAL5;
843             ACT,, XX(54).EQ.0, TERM;
844             ;
845             NAL5 ASSIGN, XX(56)=XX(56)+1, 1;
846             ACT,, XX(56).GT.XX(57).AND.
847             TNOW.LT.0.1, TERM;
848             ACT,, XX(56).GT.XX(57), RESC;
849             ACT,,, ASQ5;
850             ;             A/C IDENTIFICATION (SQ, TAIL #)
851             ;             AND STATUS CODES.
852             ASQ5 ASSIGN, XX(72)=XX(72)+1,
853             ATRIB(26)=0, ATRIB(27)=0,
854             ATRIB(1)=5, ATRIB(2)=USERF(18),
855             ATRIB(7)=USERF(137),
856             ATRIB(12)=XX(59), ATRIB(14)=0, ATRIB(15)=0,
857             ATRIB(16)=0, ATRIB(17)=0, ATRIB(18)=0;
858             ;
859             ;             A/C STATISTICS AND
860             ;             NEXT TIME OF FAILURE, BY SYSTEM.
861             ASSIGN,
862             ATRIB(4)=0, ATRIB(5)=0, ATRIB(6)=0,

```

```

863             ATRIB(28)=0, ATRIB(29)=0, ATRIB(30)=0,
864             ATRIB(19)=USERF(131), ATRIB(20)=USERF(132),
865             ATRIB(21)=USERF(133), ATRIB(22)=USERF(134),
866             ATRIB(23)=USERF(135), ATRIB(24)=USERF(136), 1;
867             ACT,,XX(54).EQ.1.AND.
868             TNOW.GT.0.1,RESC;           REPLACEMENT A/C
869             ACT,,DRAND.GT.XX(64),MXIS;   A/C IN MAINT INITIALLY
870             ACT,,ASC5;                   GENERATED OPERATIONAL A/C
871             ;
872             ;                           INITIALIZE CONFIGURATION
873             ASC5 ASSIGN, ATRIB(3)=USERF(21),
874             ATRIB(9)=1, ATRIB(10)=1, ATRIB(11)=0,
875             XX(78)=XX(78)+1, 1;
876             ACT,,XX(78).LE.XX(61),QRA;   SELECT QRA A/C (FIRST TIME ONLY)
877             ACT,,XX(78).GT.XX(61);       OPERATIONAL AIRCRAFT
878             ;
879             ;
880             ;
881             ;
882             ;                           FORM A FLIGHT OF THREE
883             ;
884             ;                           GATE OPENED BY SCHEDULER
885             ;
886             ARPS AWAIT(13),RDYPOOL5,1;    READY POOL SQ5
887             ACT,, ATRIB(12).NE.XX(48),GA15; IF WRONG CONFIG, RETURN TO RDYPOOL
888             ACT,, ATRIB(12).EQ.XX(48),ACC5;
889             GA15 CLOSE, RDYPOOL5, 1;
890             ACT,, ARP5;
891             ;
892             ACC5 ASSIGN, XX(73)=XX(73)+1,
893             ATRIB(43)=XX(49), ATRIB(44)=3,
894             ATRIB(45)=XX(73), ATRIB(46)=XX(47),
895             ATRIB(47)=XX(97), 1;          ASSIGN MISSION INFO
896             ACT,, XX(73).GT.3, ARP5;      RETURN REST TO READY POOL
897             ACT,, XX(73).LE.3, GAT5;
898             ;
899             GAT5 CLOSE, RDYPOOL5, 1;
900             ACT,, ACS5;                   TO MATCH WITH PILOT
901             ;
902             ;
903             ;
904             ACS5 QUEUE(15),,,,APM5;       TO MATCH OF A/C & PILOTS
905             ;
906             ;
907             ;
908             ;
909             CREATE, 0, .0004, .75, 1;     INITIAL PILOT GENERATION FOR SQ5
910             ACT,, XX(54).EQ.1, ASP5;
911             ACT,, XX(54).EQ.0, TERM;
912             ;

```

```

913 ; PILOT ID (SQ, ID#) AND
914 ; PILOT ACTIVITY STATISTICS.
915 ASP5 ASSIGN, XX(70)=XX(70)+1, XX(71)=XX(71)+1,
916 ATRIB(1)=5, ATRIB(2)=XX(70),
917 ATRIB(3)=USERF(11),
918 ATRIB(4)=0, ATRIB(5)=0,
919 ATRIB(6)=0, ATRIB(11)=0,
920 ATRIB(12)=0,
921 ATRIB(8)=0, ATRIB(9)=0, 1;
922 ACT,, XX(71).EQ.75, QAS;
923 ACT,, XX(71).LE.XX(61), PQRP;
924 ACT,, XX(71).LE.XX(58), PL5;
925 ACT,,, TERM;
926 ;
927 QAS ASSIGN, XX(71)=0, XX(56)=0, 1; AUTO RESET OF COUNTER
928 ACT,, XX(58).EQ.75, PL5;
929 ACT,,, TERM;
930 ;
931 ;
932 PL5 QUEUE(14),,,, APM5; TO A/C/PILOT MATCH
933 ;
934 APM5 MATCH, 48, PL5/APLT, ACS5/ASAC; ASSIGN A/C TO PILOTS
935 ;
936 ;
937 ;
938 ;
939 ;
940 ; SQ6 A/C GENERATION ROUTINE
941 ;
942 ;
943 CREATE, 0, .0005, .50, 1; INITIAL A/C GENERATION FOR SQ6
944 ACT,, XX(55).EQ.1, NAL6;
945 ACT,, XX(55).EQ.0, TERM;
946 CREATE, 0, .1000, .0005, .50, 1; IF DAY02 REPLACEMENT SQ6 REQUIRE
947 ACT,, XX(55).EQ.1, NAL6;
948 ACT,, XX(55).EQ.0, TERM;
949 CREATE, 0, .3240, .0005, .50, 1; IF DAY03 REPLACEMENT SQ6 REQUIRE
950 ACT,, XX(55).EQ.1, NAL6;
951 ACT,, XX(55).EQ.0, TERM;
952 ;
953 NAL6 ASSIGN, XX(56)=XX(56)+1, 1;
954 ACT,, XX(56).GT.XX(57).AND.
955 TNOW.LT.0.1, TERM;
956 ACT,, XX(56).GT.XX(57), RESC;
957 ACT,,, ASQ6;
958 ; A/C IDENTIFICATION (SQ, TAIL #)
959 ; AND STATUS CODES.
960 ASQ6 ASSIGN, XX(72)=XX(72)+1,
961 ATRIB(26)=0, ATRIB(27)=0,
962 ATRIB(1)=6, ATRIB(2)=USERF(18),

```

```

963          ATRIB(7)=USERF(137);
964          ATRIB(12)=XX(59),ATRIB(14)=0,ATRIB(15)=0,
965          ATRIB(16)=0,ATRIB(17)=0,ATRIB(18)=0;
966      ;
967      ;
968      ;
969      ASSIGN,
970          ATRIB(4)=0, ATRIB(5)=0, ATRIB(6)=0,
971          ATRIB(28)=0,ATRIB(29)=0,ATRIB(30)=0,
972          ATRIB(19)=USERF(131),ATRIB(20)=USERF(132),
973          ATRIB(21)=USERF(133),ATRIB(22)=USERF(134),
974          ATRIB(23)=USERF(135),ATRIB(24)=USERF(136),1;
975      ACT,,XX(55).EQ.1.AND.
976          TNOW.GT.0.1,RESC;      REPLACEMENT A/C
977      ACT,,DRAND.GT.XX(64),MXIS;  A/C IN MAINT INITIALLY
978      ACT,,,ASC6;                GENERATED OPERATIONAL A/C
979      ;
980      ;
981      ASC6 ASSIGN,ATRIB(3)=USERF(21),
982          ATRIB(9)=1, ATRIB(10)=1,ATRIB(11)=0,
983          XX(79)=XX(79)+1,1;
984      ACT,,XX(79).LE.XX(61),QRA;  SELECT QRA A/C (FIRST TIME ONLY)
985      ACT,,XX(79).GT.XX(61);      OPERATIONAL AIRCRAFT
986      ;
987      ;
988      ;
989      ;
990      ;
991      ;
992      ;
993      ;
994      ARP6 AWAIT(16),RDYPOOL6,1;  READY POOL SQ6
995      ACT,,ATRIB(12).NE.XX(48),GA16; IF WRONG CONFIG, RETURN TO RDYPOOL
996      ACT,,ATRIB(12).EQ.XX(48),ACC6;
997      GA16 CLOSE,RDYPPOOL6,1;
998      ACT,,,ARP6;
999      ;
1000      ACC6 ASSIGN,XX(73)=XX(73)+1,
1001          ATRIB(43)=XX(49),ATRIB(44)=3,
1002          ATRIB(45)=XX(73),ATRIB(46)=XX(47),
1003          ATRIB(47)=XX(97),1;      ASSIGN MISSION INFO
1004      ACT,,XX(73).GT.3,ARP6;        RETURN REST TO READY POOL
1005      ACT,,XX(73).LE.3,GAT6;
1006      ;
1007      GAT6 CLOSE,RDYPPOOL6,1;
1008      ACT,,,ACS6;                  TO MATCH WITH PILOT
1009      ;
1010      ;
1011      ;
1012      ACS6 QUEUE(18),,,,APM6;      TO MATCH OF A/C & PILOTS

```

```

1013 ;
1014 ;
1015 ;
1016 ;
1017 CREATE,0,.0005,.75,1; INITIAL PILOT GENERATION FOR SQ6
1018 ACT,,XX(55).EQ.1,ASP6;
1019 ACT,,XX(55).EQ.0,TERM;
1020 ;
1021 ; PILOT ID (SQ, ID#) AND
1022 ; PILOT ACTIVITY STATISTICS.
1023 ASP6 ASSIGN,XX(70)=XX(70)+1,XX(71)=XX(71)+1,
1024 ATRIB(1)=6,ATRI(2)=XX(70),
1025 ATRIB(3)=USERF(11),
1026 ATRIB(4)=0,ATRI(5)=0,
1027 ATRIB(6)=0,ATRI(11)=0,
1028 ATRIB(12)=0,
1029 ATRIB(8)=0,ATRI(9)=0,1;
1030 ACT,,XX(71).EQ.75,QA6;
1031 ACT,,XX(71).LE.XX(61),PQRP;
1032 ACT,,XX(71).LE.XX(58),PL6;
1033 ACT,,TERM;
1034 ;
1035 QA6 ASSIGN,XX(71)=0,XX(56)=0,1; AUTO RESET OF COUNTER.
1036 ACT,,XX(58).EQ.75,PL6;
1037 ACT,,TERM;
1038 ;
1039 ;
1040 PL6 QUEUE(17),,,,APM6; TO A/C/PILOT MATCH
1041 ;
1042 APM6 MATCH,48,PL6/APLT,ACS6/ASAC; ASSIGN A/C TO PILOTS
1043 ;
1044 ;
1045 ;
1046 ; ROUTINE TO TRANSFER PILOT
1047 ; ATTRIBUTES TO GLOBAL VARIABLES
1048 APLT ASSIGN,XX(80)=ATRI(1), XX(81)=ATRI(2),
1049 XX(82)=ATRI(3), XX(83)=ATRI(4),
1050 XX(84)=ATRI(5), XX(85)=ATRI(6),
1051 XX(86)=ATRI(7), XX(87)=ATRI(8),
1052 XX(88)=ATRI(9), XX(89)=ATRI(10),
1053 XX(90)=ATRI(11),XX(91)=ATRI(12);
1054 TERMINATE;
1055 ;
1056 ;
1057 ; ROUTINE TO TRANSFER PILOT
1058 ; ATTRIBUTES FROM GLOBAL
1059 ; VARIABLES TO A/C
1060 ASAC ASSIGN,ATRI(31)=XX(80),ATRI(32)=XX(81),
1061 ATRIB(33)=XX(82),ATRI(34)=XX(83),
1062 ATRIB(35)=XX(84),ATRI(36)=XX(85),

```

```

1063             ATRIB(37)=XX(86),ATRI(38)=XX(87),
1064             ATRIB(39)=XX(88),ATRI(40)=XX(89);
1065             ;
1066             ASSIGN,ATRI(41)=XX(90),
1067             ATRIB(42)=XX(91),1;
1068             ;
1069             ;
1070             ;
1071             ;
1072             ;
1073             ;
1074             ;
1075             ;
1076             ACT,,TNOW.GE.1440.0.AND.
1077             ATRIB(41).EQ.0.AND.
1078             ATRIB(42).EQ.0.OR.
1079             TNOW.GE.2880.0.AND.
1080             ATRIB(42).EQ.0.PPFT;
1081             ;
1082             ;
1083             ;
1084             ACT,,ATRI(42).NE.0,CL06;
1085             ACT,,ATRI(41).NE.0,CL05;
1086             ACT,,ATRI(40).NE.0,CL04;
1087             ACT,,,PPFT;
1088             ;
1089             CL06 COLCT,INTVL(42),PILOTGRNDTIME03,,1; DAY 03
1090             ACT,,,PPFT;
1091             CL05 COLCT,INTVL(41),PILOTGRNDTIME02,,1; DAY 02
1092             ACT,,,PPFT;
1093             CL04 COLCT,INTVL(40),PILOTGRNDTIME01,,1; DAY 01
1094             ACT,,,PPFT;
1095             ;

```

ROUTINE TO COLLECT STATISTICS
ON THE AMOUNT OF TIME A PILOT
HAS ON THE GROUND BETWEEN
FLIGHTS. TO VALIDATE FLIGHT
PLANNING AND BRIEFING TIME
AVAILABILITY.

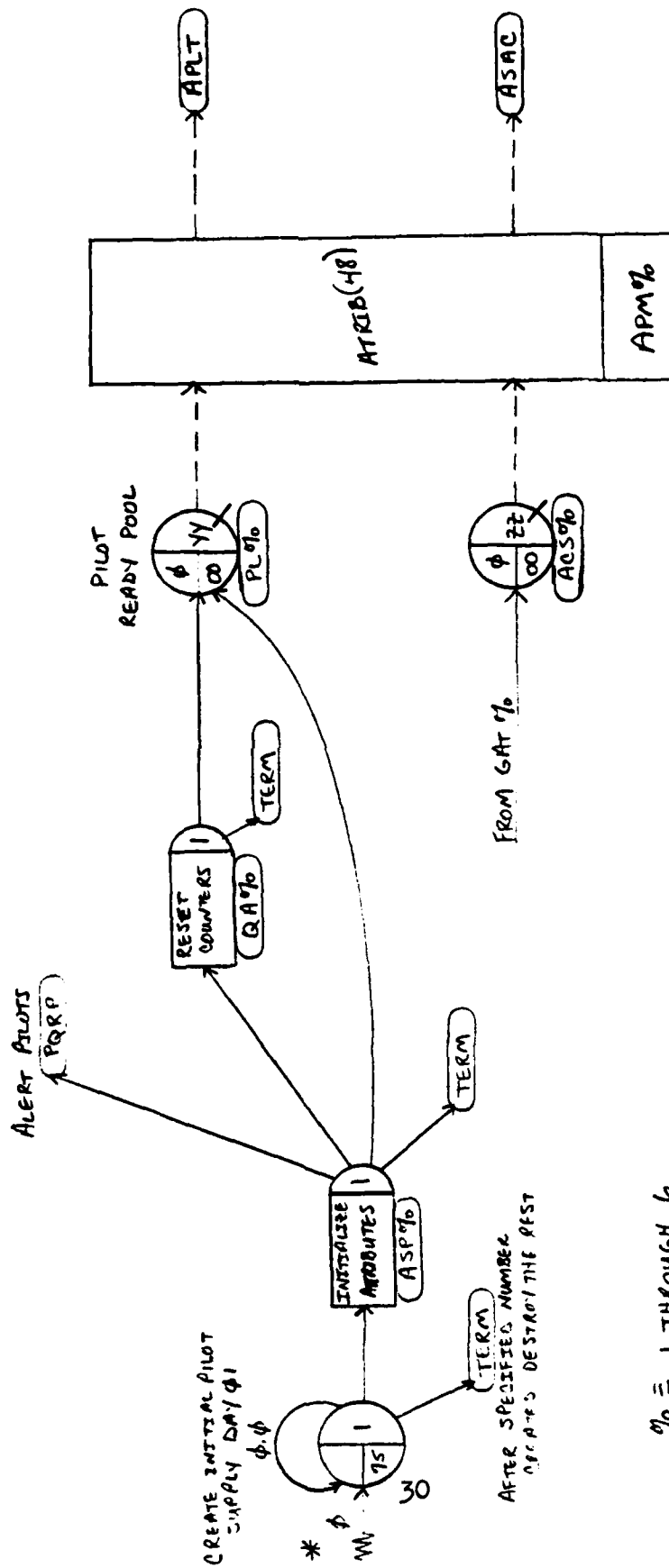
BRANCH AROUND STAT ON 1ST MSN
OF DAY ELSE GO TO STAT NODE
FOR TIME ON GROUND FOR PILOT
BETWEEN FLIGHTS.

BRANCH FOR FIRST TIME THRU, DAY 01



XY = (1, 4, 7, 10, 13, 16)
% = 1 THROUGH 6

% = 1 THROUGH 6



$\eta_0 \equiv 1$ THROUGH 6

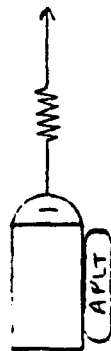
$\gamma\gamma \equiv (2, 5, 8, 11, 14, 17)$

$z\bar{z} \equiv (3, 6, 9, 12, 15, 18)$

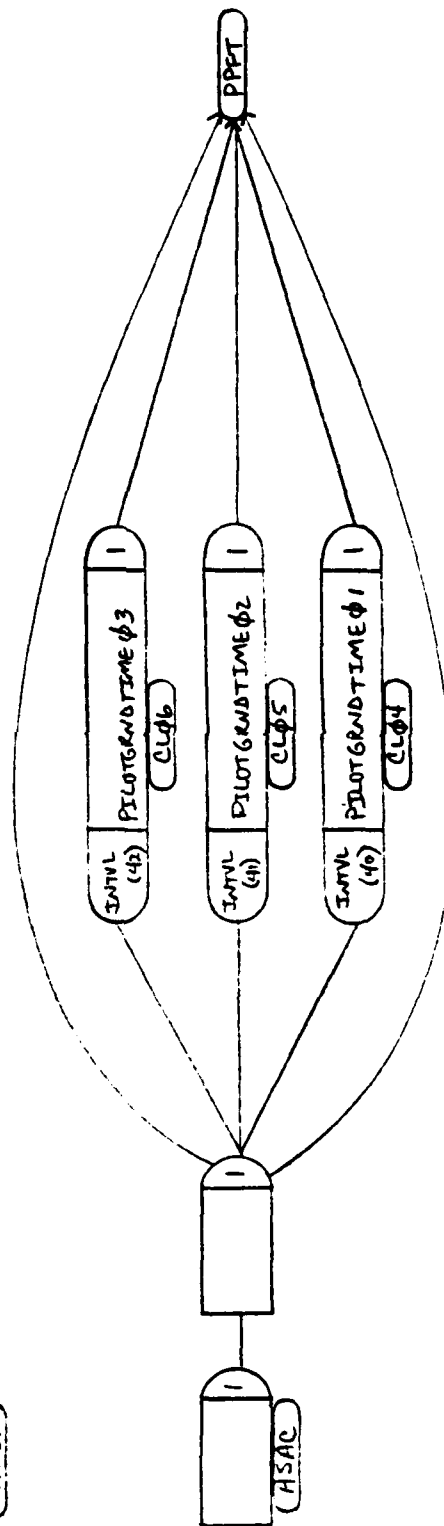
* SUBSEQUENT SQDN. TIMES HAVE $\phi\phi\phi$ ADDED

Fig A.1.2 Pilot Creation and Aircraft/Pilot Match

PUT PILOT IN THE A/C



31



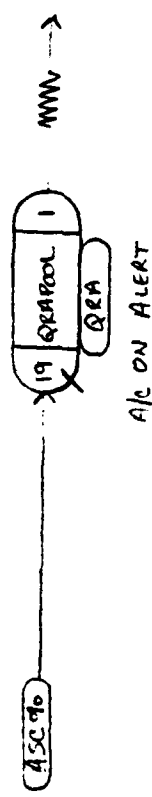
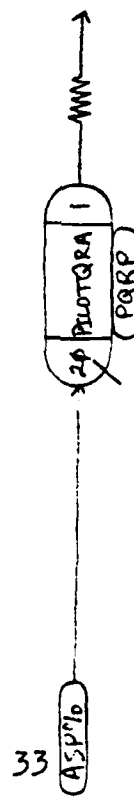
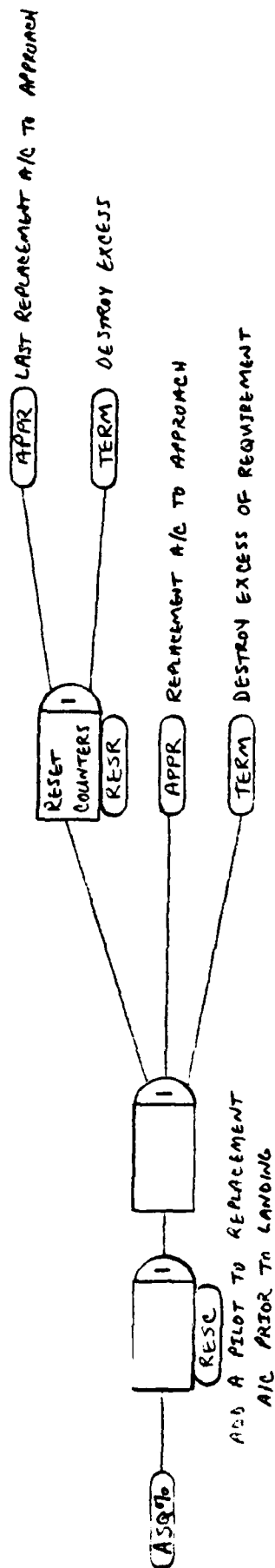
STATISTICS ON THE TIME BETWEEN ENGINE SHUTDOWN
AND NEXT PILOT PREFLIGHT

Fig A.1.3 Creation Common Area

```

1096      ; REPLACEMENT A/C AND PILOT INITIALIZATION AND QRA
1097      ; WHEN RESUPPLY IS SCHEDULED, AT THE DESIGNATED TIME THE A/C
1098      ; ARE CREATED AND ROUTED TO RESC WHERE THE PILOT IS INITIALIZED AND
1099      ; PLACED IN THE A/C. THE AIRCRAFT THEN PROCEEDS TO APPROACH TO
1100      ; OBTAIN THE RUNWAY AND LAND.
1101      ; BECAUSE THE REPLACEMENT PILOTS ARE CREATED ON A ONE FOR ONE BASIS
1102      ; WITH REPLACEMENT A/C THE USER PROVIDED NUMBER OF PILOTS PER SQUAD-
1103      ; RON DOES NOT HOLD TRUE AFTER RESUPPLY. TO ATTEMPT TO CONFORM TO
1104      ; THE USERS INTENT, THE RATIO OF PILOT QUALIFICATION STATUS (FLIGHT
1105      ; LEAD, ETC.) IS MAINTAINED.
1106      ; AIRCRAFT ASSIGNED TO QRA ARE STORED IN THE AIRCRAFT QRA AWAIT NODE
1107      ; PILOTS SELECTED FOR QRA ARE PLACED IN THE PILOT QRA NODE FILE.
1108      ;
1109      ; ROUTINE TO SET UP ATTRIBUTES OF
1110      ; PILOTS LANDING WITH A REPLACE-
1111      ; MENT SQUADRON
1112      RESC ASSIGN,XX(70)=XX(70)+1,
1113      XX(71)=XX(71)+1,ATRI(31)=ATRI(1),
1114      ATRI(32)=XX(70),ATRI(33)=USERF(11),
1115      ATRI(34)=0,ATRI(35)=0,ATRI(36)=0,
1116      ATRI(38)=0,ATRI(39)=0,1;
1117      ;
1118      ASSIGN,
1119      ATRI(41)=0,ATRI(42)=0,
1120      ATRI(8)=TNOW-50,1;
1121      ACT,,XX(71).EQ.50,RESR;
1122      ACT,,XX(71).LE.XX(57),APPR;
1123      ACT,,TERM; REPLACEMENT SQ A/C TO TERM
1124      ;
1125      RESR ASSIGN,XX(71)=0,XX(56)=0,1;
1126      ACT,,XX(57).EQ.50,APPR;
1127      ACT,,TERM;
1128      ;
1129      ;
1130      PQRP AWAIT(20),PILOTQRA,1; QRA PILOT HOLDING AREA
1131      TERMINATE;
1132      ;
1133      QRA AWAIT(19),QRAPOOL,1; QRA A/C HOLDING AREA
1134      TERMINATE;
1135      ;

```



PILOTQRA	CLOSE	2φ
QRAPOOL	CLOSE	19

Fig A.2.1 Replacement Squadron Processing and Quick Reaction Alert (QRA)

% = 1 THROUGH 6

```

1136      ; INITIALIZATION OF AIRCRAFT IN MAINTENANCE
1137      ; A USER SELECTABLE PERCENTAGE OF AIRCRAFT ARE NOT INITIALLY OR.
1138      ; THESE AIRCRAFT ARE DISTRIBUTED AMONG THE MAINTENANCE SERVICE
1139      ; FACILITIES IN A UNIFORM MANNER. AIRCRAFT WITH LEVEL 4 OR 5
1140      ; PROBLEMS ARE REPAIRED AT WING OR BY AN MMT, WHILE 2 AND 3 LEVEL
1141      ; PROBLEMS ARE REPAIRED AT SQUADRON.
1142      ;
1143      MXIS ASSIGN, ATRIB(9)=0, ATRIB(10)=0,
1144      ATRIB(11)=0, ATRIB(18)=USERF(16),
1145      ATRIB(3)=USERF(23), 1;      ASSIGN SQ PARKING TO MX A/C
1146      ACT,, USERF(37).GE.4, MXRT;      MAJOR MAINTENANCE ROUTE (WG/MMT)
1147      ACT,, USERF(37).LT.4, SPMX;      TO SQ MX
1148      ;
1149      MXRT GOON, 1;      DISTRIBUTE INITIALLY BROKEN A/C
1150      ACT,, .66, WGPR;      TO WING
1151      ACT,, .34, SPMX;      TO SPMX
1152      ;
1153      WGPR ASSIGN, ATRIB(3)=USERF(22),
1154      ATRIB(3)=4, 1;      UNPARK AT SQ, PARK AT WING
1155      ACT,, WG;

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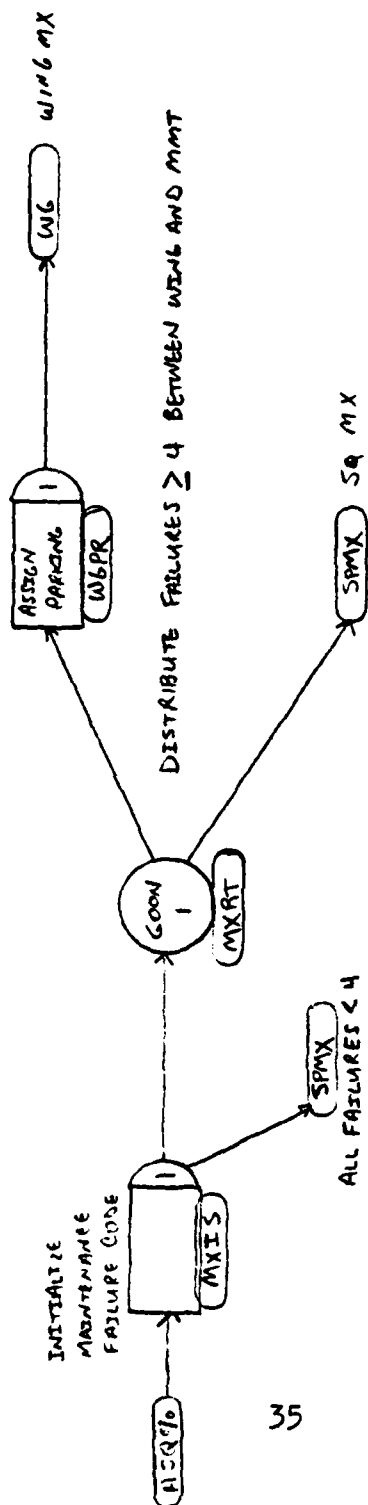


Fig A.3.1 Initialization of Aircraft in Maintenance

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1156      ; PILOT PREFLIGHT
1157      ; AIRCRAFT ARRIVING AT PILOT PREFLIGHT ACQUIRE A CREW CHIEF AND RE-
1158      ; CEIVE NORMAL OR DELAYED SERVICE DUE TO A PROBLEM. AIRCRAFT WITH
1159      ; DELAYED SERVICE HAVE A SLIGHTLY HIGHER PROBABILITY OF FAILURE
1160      ; BECAUSE A FAILURE WILL BE SHOWN IF THE AIRCRAFT IS WITHIN 5 MIN-
1161      ; UTES OF AN NTOF ON ANY SYSTEM.
1162      ; IF THE LEAD AIRCRAFT IS BROKEN AND A SPARE IS NOT AVAILABLE, THE
1163      ; LEAD PILOT TAKES THE NUMBER THREE AIRCRAFT UNLESS THE NUMBER THREE
1164      ; PILOT IS FLIGHT LEAD QUALIFIED.
1165      ; ONCE THE PREFLIGHT ACTIVITY IS FINISHED THE AIRCRAFT ARE EVALU-
1166      ; ATED FOR THEIR FAILURE STATUS. BROKEN AIRCRAFT ATTEMPT TO GET
1167      ; A SPARE. THE FLIGHT THEN PROCEEDS AS A THREE-SHIP, A TWO-SHIP,
1168      ; OR THE MISSION IS SCRUBBED.
1169      ;
1170      PPFT ASSIGN,II=ATRIB(46),XX(II)=0,1; CLEAR MISSION (MSN) STATUS CODE
1171      ACT,,,PFRS;
1172      ;
1173      PFRS AWAIT(21),MXTEAM/1,1; WAIT FOR A CREW CHIEF
1174      ACT,,DRAND.GT.XX(65),PFST; XX(65)=% TIME PREFLT DELAYED
1175      ACT,,,PFNS;
1176      ;
1177      PFST ASSIGN,ATRIB(8)=TRIAG(4,5,7),1; NORMAL PILOT PRE-FLIGHT
1178      ACT/41,ATRIB(8),,PFAS;
1179      ;
1180      PFNS ASSIGN,ATRIB(18)=USERF(52),
1181      ATRIB(8)=TRIAG(4,5,7)+
1182      TRIAG(6,10,12),1;PILOT PRE-FLIGHT W/DELAY
1183      ACT/42,ATRIB(8),,PFAS;
1184      ;
1185      PFAS ASSIGN,ATRIB(18)=USERF(51),1; UPDATE DYNAMIC FAILURE CODE
1186      ACT,,ATRIB(45).EQ.1.AND.
1187      USERF(37).GE.2,PEV1; A/C 1 FAIL
1188      ACT,,ATRIB(45).EQ.1.AND.
1189      USERF(37).LT.2,QPF1; A/C 1 OK
1190      ACT,,ATRIB(45).EQ.2.AND.
1191      USERF(37).GE.2,PEV2; A/C 2 FAIL
1192      ACT,,ATRIB(45).EQ.2.AND.
1193      USERF(37).LT.2,QPF2; A/C 2 OK
1194      ACT,,ATRIB(45).EQ.3.AND.
1195      USERF(37).GE.2,PEV3; A/C 3 FAIL
1196      ACT,,ATRIB(45).EQ.3.AND.
1197      USERF(37).LT.2,QPF3; A/C 3 OK
1198      ;
1199      PEV1 EVENT,10,1; GET SPARE A/C IF AVAILABLE
1200      ACT,,XX(95).EQ.1,PFA1;
1201      ACT,,XX(95).EQ.0,PPF1;
1202      ;
1203      PPF1 ASSIGN,II=ATRIB(46),
1204      XX(II)=XX(II)+2,1; SET MISSION (MSN) STATUS CODE
1205      ACT,,,QPF1;

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```

1206 ;
1207 QPF1 QUEUE(22),,,,PFMA; QUEUE TO MATCH A/C 1 W/MSN#
1208 ;
1209 PEV2 EVENT,10,1; GET SPARE A/C IF AVAILABLE
1210 ACT,,XX(95).EQ.1,PFA1;
1211 ACT,,XX(95).EQ.0,PFF2;
1212 ;
1213 PFF2 ASSIGN,II=ATRIB(46),
1214 XX(II)=XX(II)+4,1; SET MSN STATUS CODE
1215 ACT,,QPF2;
1216 ;
1217 QPF2 QUEUE(23),,,,PFMA; QUEUE TO MATCH A/C 2 W/MSN#
1218 ;
1219 PEV3 EVENT,10,1; GET SPARE A/C IF AVAILABLE
1220 ACT,,XX(95).EQ.1,PFA1;
1221 ACT,,XX(95).EQ.0,PFF3;
1222 ;
1223 PFF3 ASSIGN,II=ATRIB(46),
1224 XX(II)=XX(II)+5,1; SET MSN STATUS CODE
1225 ACT,,QPF3;
1226 ;
1227 QPF3 QUEUE(24),,,,PFMA; QUEUE TO MATCH A/C 3 W/MSN#
1228 ;
1229 PFMA MATCH,46,QPF1/PFS1,QPF2/PFT1,
1230 QPF3/PFU1; MATCH A/C BY MSN#
1231 ;
1232 PFS1 ASSIGN,II=ATRIB(46),1;
1233 ACT,,XX(II).EQ.2.OR.XX(II).EQ.6.OR.
1234 XX(II).EQ.7.OR.
1235 XX(II).EQ.11,PFS2; IF A/C 1 FAIL
1236 ACT,,XX(II).EQ.9,STRP; IF A/C 1 SYM ABORT
1237 ACT,,XX(II).EQ.4.OR.
1238 XX(II).EQ.5,PFA2; IF A/C 1 NOW IN TWO SHIP
1239 ACT,,XX(II).EQ.0,ST3; IF A/C 1 STILL IN THREE SHIP
1240 ;
1241 PFS2 GOON,2;
1242 ACT,,ATRIB(43).NE.1,PSEP;
1243 ACT,,ATRIB(43).NE.1,PFA1; IF NOT IN CASE 1
1244 ACT,,ATRIB(43).EQ.1,PFS3; CASE 1
1245 ;
1246 ; TRANSFER PILOT 1 ATTRIBUTES
1247 ; TO GLOBAL VARIABLES
1248 PFS3 ASSIGN,XX(81)=ATRIB(32),XX(82)=ATRIB(33),
1249 XX(83)=ATRIB(34),XX(84)=ATRIB(35),
1250 XX(85)=ATRIB(36),XX(86)=ATRIB(37),
1251 XX(87)=ATRIB(38),XX(88)=ATRIB(39),
1252 XX(89)=ATRIB(40),XX(90)=ATRIB(41),
1253 XX(91)=ATRIB(42),ATRIB(32)=0,1;
1254 ACT,,PFA1;;
1255 ;

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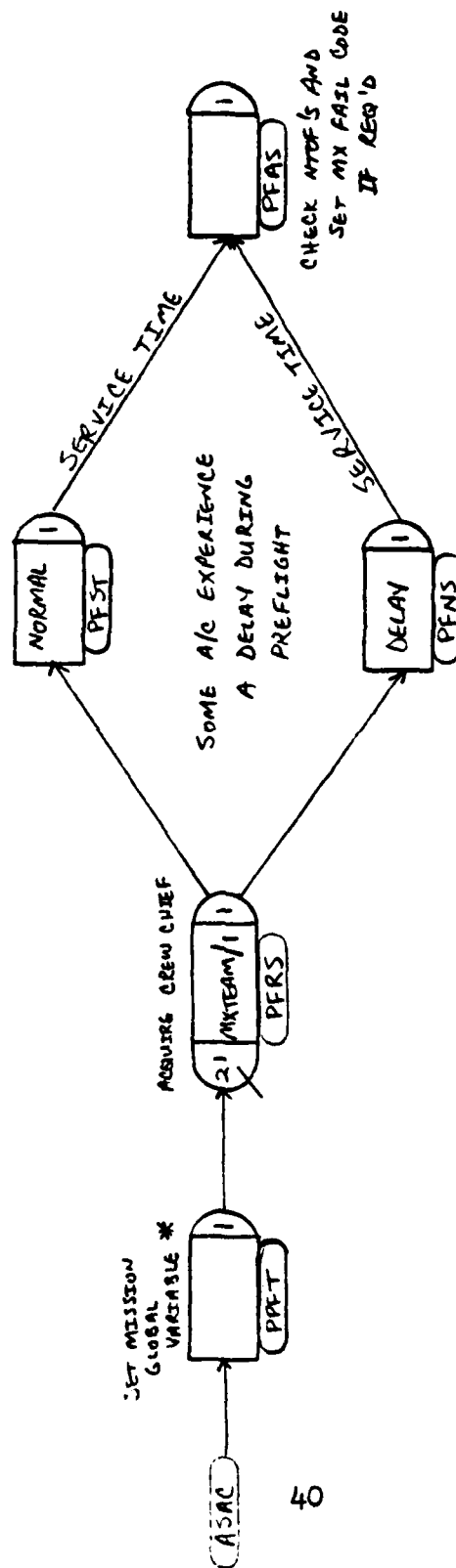
1256      PFA1 ASSIGN, ATRIB(32)=0,
1257      ATRIB(13)=ATRIB(1),1;      ASSIGN A/C LOCATION CODE (BY SQ)
1258      ACT,,,SMXC;
1259      ;
1260      ;
1261      PFT1 ASSIGN,II=ATRIB(46),2;
1262      ACT,,,XX(II).EQ.4.OR.XX(II).EQ.6.OR.
1263      XX(II).EQ.9.OR.
1264      XX(II).EQ.11,PSEP;      PILOT 2 RETURN TO READY POOL
1265      ACT,,,XX(II).EQ.4.OR.XX(II).EQ.6.OR.
1266      XX(II).EQ.9.OR.
1267      XX(II).EQ.11,PFA1;      A/C 2 BROKEN
1268      ACT,,,XX(II).EQ.7,STRP;      A/C 2 SYM ABORT
1269      ACT,,,XX(II).EQ.2.OR.
1270      XX(II).EQ.5,PFA2;      A/C 2 NOW IN TWO SHIP
1271      ACT,,,XX(II).EQ.0,ST3;      A/C 2 STILL IN THREE SHIP
1272      ;
1273      PFU1 ASSIGN,II=ATRIB(46),2;
1274      ACT,,,XX(II).EQ.5.OR.XX(II).EQ.7.OR.
1275      XX(II).EQ.9.OR.
1276      XX(II).EQ.11,PFU2;      A/C 3 BROKEN
1277      ACT,,,XX(II).EQ.6,STRP;      A/C 3 SYM ABORT
1278      ACT,,,XX(II).EQ.0,ST3;      A/C 3 STILL IN THREE SHIP
1279      ACT,,,XX(II).EQ.2.AND.
1280      ATRIB(43).NE.1,PFU5;      A/C 3 NOW LEAD IN A TWO SHIP
1281      ACT,,,XX(II).EQ.4,PFU6;      A/C 3 NOW #2 IN A TWO SHIP
1282      ACT,,,XX(II).EQ.2.AND.
1283      ATRIB(43).EQ.1,PSEP;      PILOT #3 RETURN TO READYPOOL
1284      ACT,,,XX(II).EQ.2.AND.
1285      ATRIB(43).EQ.1,PFU7;      PILOT #1 TAKES A/C 3
1286      ;
1287      PFU2 ASSIGN,XX(II)=0,2;      BROKEN
1288      ACT,,,PSEP;
1289      ACT,,,PFA1;      TO MX
1290      ;
1291      PFU5 ASSIGN, ATRIB(45)=1,XX(II)=0,1;      REASSIGNS A/C 3 AS A/C 1
1292      ACT,,,PFA2;      TWO SHIP
1293      ;
1294      PFU6 ASSIGN, ATRIB(45)=2,XX(II)=0,1;      ASSIGNS A/C 3 AS A/C 2
1295      ACT,,,PFA2;      TWO SHIP
1296      ;
1297      ;      PLACE PILOT 1 IN A/C 3
1298      PFU7 ASSIGN, ATRIB(32)=XX(81), ATRIB(33)=XX(82),
1299      ATRIB(34)=XX(83), ATRIB(35)=XX(84),
1300      ATRIB(36)=XX(85), ATRIB(37)=XX(86),
1301      ATRIB(38)=XX(87), ATRIB(39)=XX(88),
1302      ATRIB(40)=XX(89), ATRIB(41)=XX(90),
1303      ATRIB(42)=XX(91),1;
1304      ACT,,,PFU5;
1305      ;

```

1306
1307
1308

PFA2 ASSIGN,TRIB(44)=2,1;
ACT,,,ST2;
;

SETS CODE FOR TWO SHIP
TO START TWO



* MISSION GLOBAL VARIABLE (MGV) -
INDICATES CURRENT MAINTENANCE
STATUS OF EACH A/C IN A FLIGHT

Fig A.4.1 Pilot Preflight

MRTEAM (96)	21	51	98
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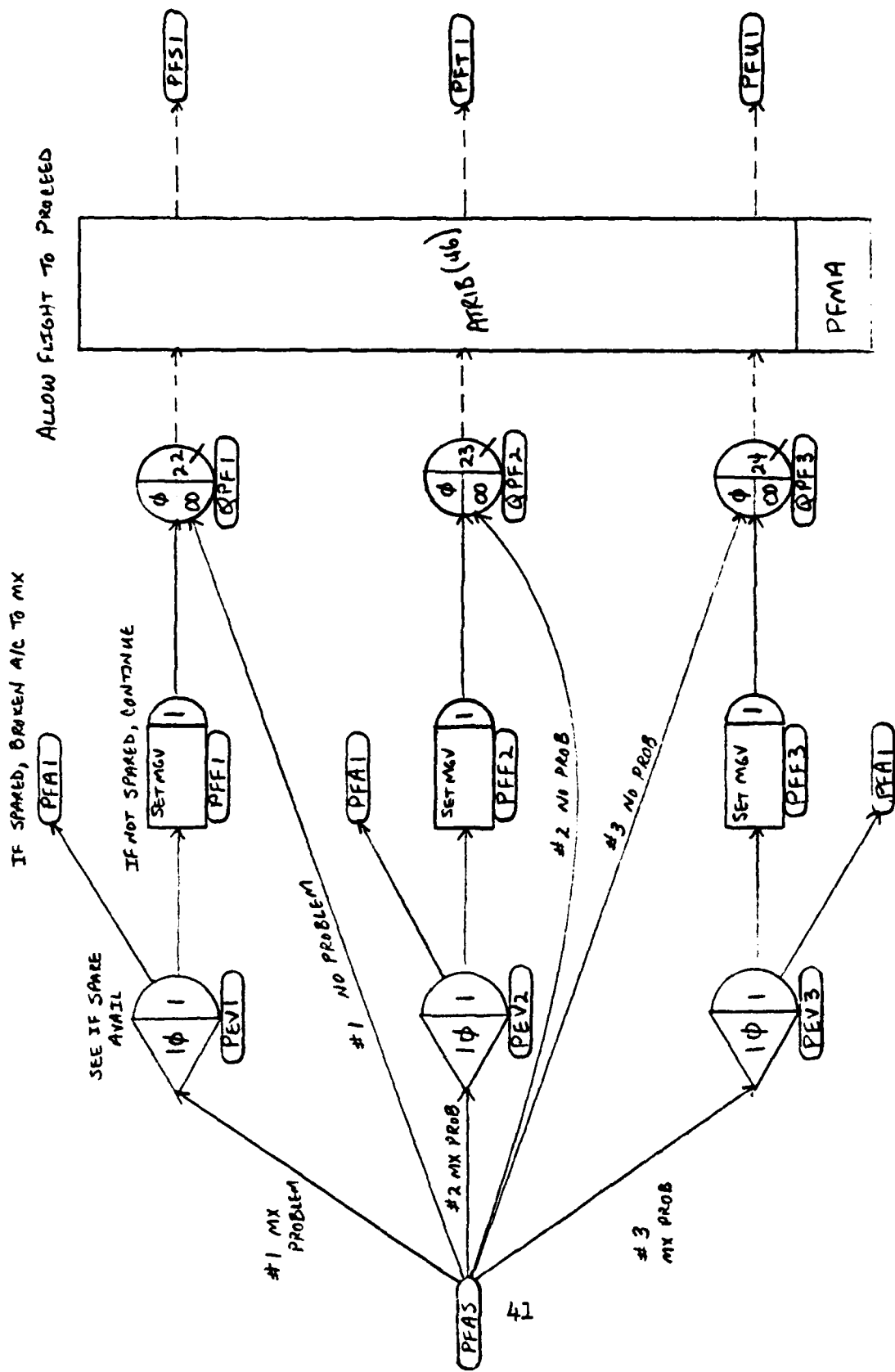


Fig A.4.2 Pilot Preflight

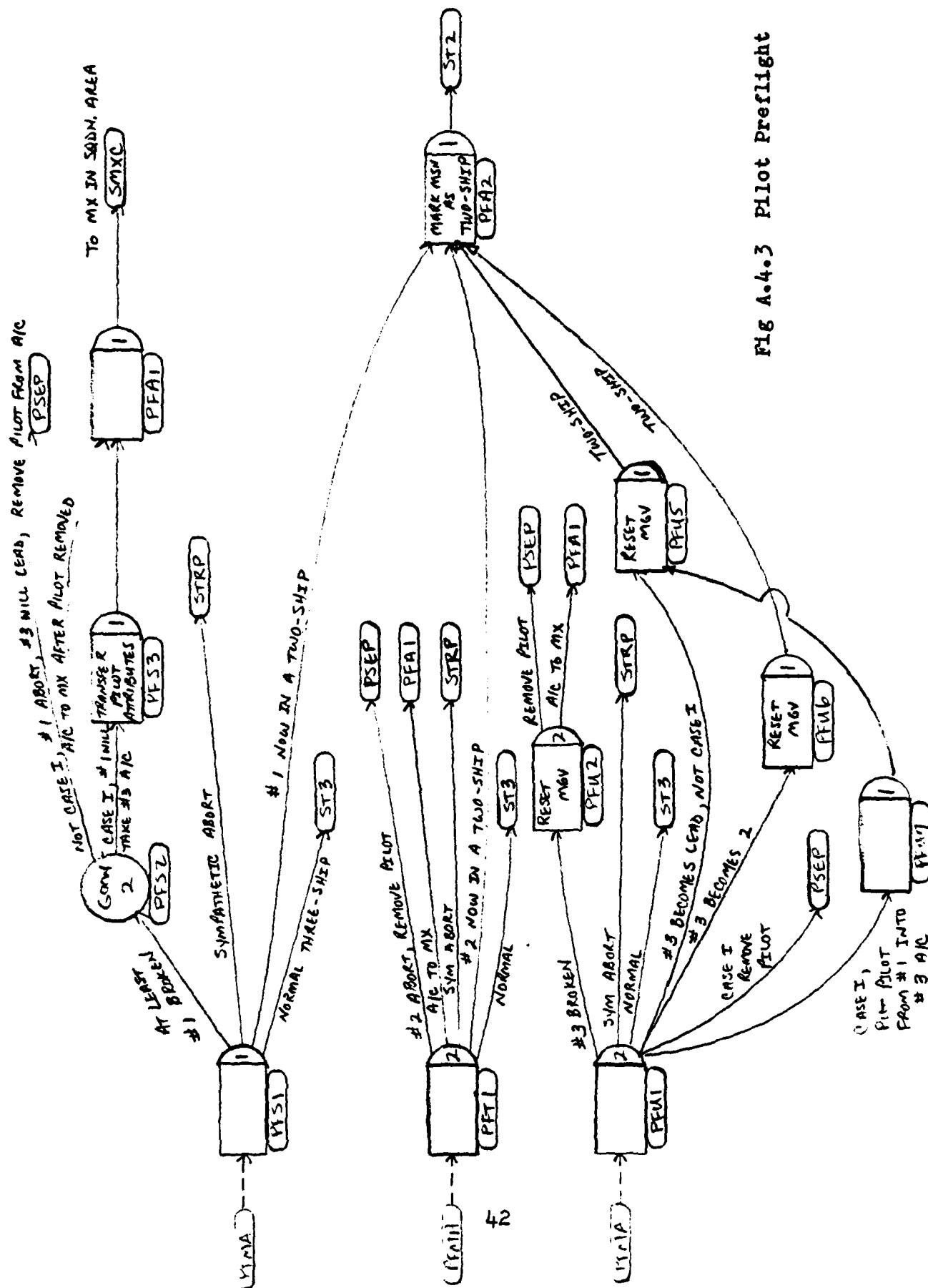


Fig A.4.3 Pilot Preflight

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1309          ; THREE-SHIP START
1310          ; THIS SECTION PROVIDES TIME FOR STRAP-IN AND PRE-START CHECKS.
1311          ; A/C THEN START ENGINES. SOME MAY BE DELAYED ON START. AFTER
1312          ; START, IN THE CHOCK CHECKS ARE ACCOMPLISHED. ONCE THE A/C HAVE
1313          ; STARTED, ENGINE RUN TIME IS TRACKED. THIS VALUE IS USED TO COM-
1314          ; PARE TO NTOF TO DETERMINE WHEN AN AIRCRAFT FAILS FOR A GIVEN
1315          ; SYSTEM. ONCE CHECKS ARE COMPLETE, AIRCRAFT ARE EVALUATED FOR
1316          ; FAILURES AND ROUTED ACCORDINGLY. AS WITH PREFLIGHT, IF THE LEAD
1317          ; A/C BREAKS THE PILOT TAKES THE NUMBER THREE A/C UNLESS ITS
1318          ; PILOT IS A FLIGHT LEAD.
1319          ;
1320          ST3 GOON,1;                XX(66)- % OF A/C DELAYED STARTING
1321          ACT,TRIAC(2,3,4);
1322          DRAND,GT,XX(66),S3AS;      NORMAL PROCESS
1323          ACT,TRIAC(4,5,6),,S3AS;    DELAYED PROCESS
1324          ;
1325          S3AS ASSIGN,ATRI(8)=TNOW,1; A/C OPERATING TIME HAS BEGUN
1326          ACT,TRIAC(2,3,4);
1327          ATRIB(45).EQ.1,QST1;       CONTROL SURFACE TESTING
1328          ACT,TRIAC(2,3,4);
1329          ATRIB(45).EQ.2,QST2;
1330          ACT,TRIAC(2,3,4);
1331          ATRIB(45).EQ.3,QST3;
1332          ;
1333          QST1 QUEUE(25),,,,S3MA;    WAIT TILL ALL 3 A/C ARE DONE
1334          ;
1335          QST2 QUEUE(26),,,,S3MA;
1336          ;
1337          QST3 QUEUE(27),,,,S3MA;
1338          ;
1339          S3MA MATCH,46,QST1/S3F1,QST2/S3F2,
1340          QST3/S3F3;                 REFORM FLIGHT
1341          ;
1342          ;                           UPDATE MISSION STATUS CODE BY A/C
1343          S3F1 ASSIGN,ATRI(8) =TNOW - ATRIB(8),
1344          ATRIB(14)=ATRI(14)+ATRI(8),
1345          ATRIB(7) =ATRI(7) +ATRI(8),
1346          ATRIB(18)=USERF(51),
1347          ATRIB(8) =TNOW,1;
1348          ACT,,USERF(37).GE.2,S3F4;   A/C 1 BROKEN
1349          ACT,.0001,,STS1;           A/C 1 OK
1350          ;
1351          S3F4 ASSIGN,II=ATRI(46),
1352          XX(II)=XX(II)+2,1;          SET UP TO GO TO MX
1353          ACT,.0001,,STS1;
1354          ;
1355          ;                           UPDATE MISSION STATUS CODE BY A/C
1356          ;
1357          S3F2 ASSIGN,ATRI(8) =TNOW - ATRIB(8),
1358          ATRIB(14)=ATRI(14)+ATRI(8),

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```

1359             ATRIB(7) = ATRIB(7) + ATRIB(8),
1360             ATRIB(18) = USERF(51),
1361             ATRIB(8) = TNOW, 1;
1362             ACT, USERF(37).GE.2, S3F5;           A/C 2 BROKEN
1363             ACT, .0001, STT1;                     A/C 2 OK
1364             ;
1365             S3F5 ASSIGN, II = ATRIB(46),
1366             XX(II) = XX(II) + 4, 1;             SET UP TO GO TO MX
1367             ACT, .0001, STT1;
1368             ;
1369             ;                                     UPDATE MISSION STATUS CODE BY A/C
1370             ;
1371             S3F3 ASSIGN, ATRIB(8) = TNOW - ATRIB(8),
1372             ATRIB(14) = ATRIB(14) + ATRIB(8),
1373             ATRIB(7) = ATRIB(7) + ATRIB(8),
1374             ATRIB(18) = USERF(51),
1375             ATRIB(8) = TNOW, 1;
1376             ACT, USERF(37).GE.2, S3F6;           A/C 3 BROKEN
1377             ACT, .0001, STU1;                     A/C 3 OK
1378             ;
1379             S3F6 ASSIGN, II = ATRIB(46),
1380             XX(II) = XX(II) + 5, 1;             SET UP TO GO TO MX
1381             ACT, .0001, STU1;
1382             ;
1383             ;
1384             ;                                     CHECK THE MISSION STATUS CODE TO
1385             ;                                     DETERMINE WHAT HAPPENED TO EACH
1386             ;                                     A/C IN THE FLIGHT
1387             STS1 ASSIGN, II = ATRIB(46), 1;
1388             ACT, XX(II).EQ.2.OR.XX(II).EQ.6.OR.
1389             XX(II).EQ.7.OR.
1390             XX(II).EQ.11, STS2;                   A/C 1 FAILED
1391             ACT, XX(II).EQ.9, STRP;                 SYM ABORT
1392             ACT, XX(II).EQ.4.OR.
1393             XX(II).EQ.5, STA2;                     A/C 1 PART OF TWO SHIP
1394             ACT, XX(II).EQ.8, T3UP;                 FLIGHT STILL A THREE SHIP
1395             ;
1396             STS2 ASSIGN, XX(95) = USERF(124), 2;
1397             ACT, ATRIB(43).NE.1, PSEP;
1398             ACT, ATRIB(43).NE.1, S2L0;             A/C 1 FAIL, NOT CASE 1
1399             ACT, ATRIB(43).EQ.1, STS3;             A/C 1 FAIL, CASE 1
1400             ;
1401             ;                                     PLACE PILOT 1 ATTRIBUTES IN GLOBAL
1402             ;                                     VARIABLES SO THEY CAN BE PLACED
1403             ;                                     IN A/C 3. ALSO, ZERO OUT PILOT
1404             ;                                     BECAUSE A/C 1 NO LONGER HAS A
1405             ;                                     PILOT IN IT.
1406             STS3 ASSIGN, XX(81) = ATRIB(32), XX(82) = ATRIB(33),
1407             XX(83) = ATRIB(34), XX(84) = ATRIB(35),
1408             XX(85) = ATRIB(36), XX(86) = ATRIB(37),

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1409          XX(87)=ATRI(38),XX(88)=ATRI(39),
1410          XX(89)=ATRI(40),XX(90)=ATRI(41),
1411          XX(91)=ATRI(42),ATRI(32)=0,1;
1412          ACT,,,S2L0;
1413          ;
1414          STT1 ASSIGN,II=ATRI(46),
1415          XX(95)=USERF(124),2;
1416          ACT,,,XX(II).EQ.4.OR.XX(II).EQ.6.OR.
1417          XX(II).EQ.9.OR.
1418          XX(II).EQ.11,PSEP;          PILOT SEPERATION
1419          ACT,,,XX(II).EQ.4.OR.XX(II).EQ.6.OR.
1420          XX(II).EQ.9.OR.
1421          XX(II).EQ.11,S2L0;          A/C 2 FAILED
1422          ACT,,,XX(II).EQ.7,STRP;          A/C 2 SYM ABORT
1423          ACT,,,XX(II).EQ.2.OR.
1424          XX(II).EQ.5,STA2;          A/C 2 PART OF TWO SHIP
1425          ACT,,,XX(II).EQ.0,T3UP;          A/C 2 STILL IN THREE SHIP
1426          ;
1427          STU1 ASSIGN,II=ATRI(46),
1428          XX(95)=USERF(124),2;
1429          ACT,,,XX(II).EQ.5.OR.XX(II).EQ.7.OR.
1430          XX(II).EQ.9.OR.
1431          XX(II).EQ.11,STU2;          A/C 3 FAILED
1432          ACT,,,XX(II).EQ.6,STRP;          A/C 3 SYM ABORT
1433          ACT,,,XX(II).EQ.0,T3UP;          A/C 3 STILL IN THREE SHIP
1434          ACT,,,XX(II).EQ.2.AND.
1435          ATRI(43).NE.1,SJ5;          NOW A/C 1 IN TWO SHIP (CASE.NE.1)
1436          ACT,,,XX(II).EQ.4,STU6;          NOW A/C 2 IN TWO SHIP (CASE.NE.1)
1437          ACT,,,XX(II).EQ.2.AND.
1438          ATRI(43).EQ.1,PSEP;          SEND PILOT 3 BACK
1439          ACT,,,XX(II).EQ.2.AND.
1440          ATRI(43).EQ.1,STU7;          A/C 3 NOW LEAD IN TWO SHIP (CASE 1)
1441          ;
1442          STU2 ASSIGN,XX(II)=0,
1443          XX(95)=USERF(124),2;
1444          ACT,,,PSEP;          SEPARATE PILOT FROM A/C
1445          ACT,,,S2L0;          A/C 3 TO MX
1446          ;
1447          STU5 ASSIGN,ATRI(45)=1,XX(II)=0,1;          CHANGE A/C 3 TO LEAD A/C
1448          ACT,,,STA2;
1449          ;
1450          STU6 ASSIGN,ATRI(45)=2,XX(II)=0,1;          CHANGE A/C 3 POSITION TO 2
1451          ACT,,,STA2;
1452          ;
1453          ;          MOVE PILOT 1 ATTRIBUTES INTO A/C
1454          ;          WHICH THEN BECOMES LEAD A/C
1455          STU7 ASSIGN,ATRI(32)=XX(81),ATRI(33)=XX(82),
1456          ATRI(34)=XX(83),ATRI(35)=XX(84),
1457          ATRI(36)=XX(85),ATRI(37)=XX(86),
1458          ATRI(38)=XX(87),ATRI(39)=XX(88),

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1459             ATRIB(40)=XX(89), ATRIB(41)=XX(90),
1460             ATRIB(42)=XX(91), 1;
1461             ACT,,,STU5;
1462             ;
1463             STA2 ASSIGN, ATRIB(44)=2,
1464             ATRIB(3)=USERF(22),
1465             ATRIB(1)=USERF(17), 1;      MAKE TWO SHIP AND UNPARK
1466             ACT,,,TMA2;
1467             T3UP ASSIGN, ATRIB(3)=USERF(22),
1468             ATRIB(1)=USERF(17), 1;
1469             ACT,,,TMA3;
1470             ;

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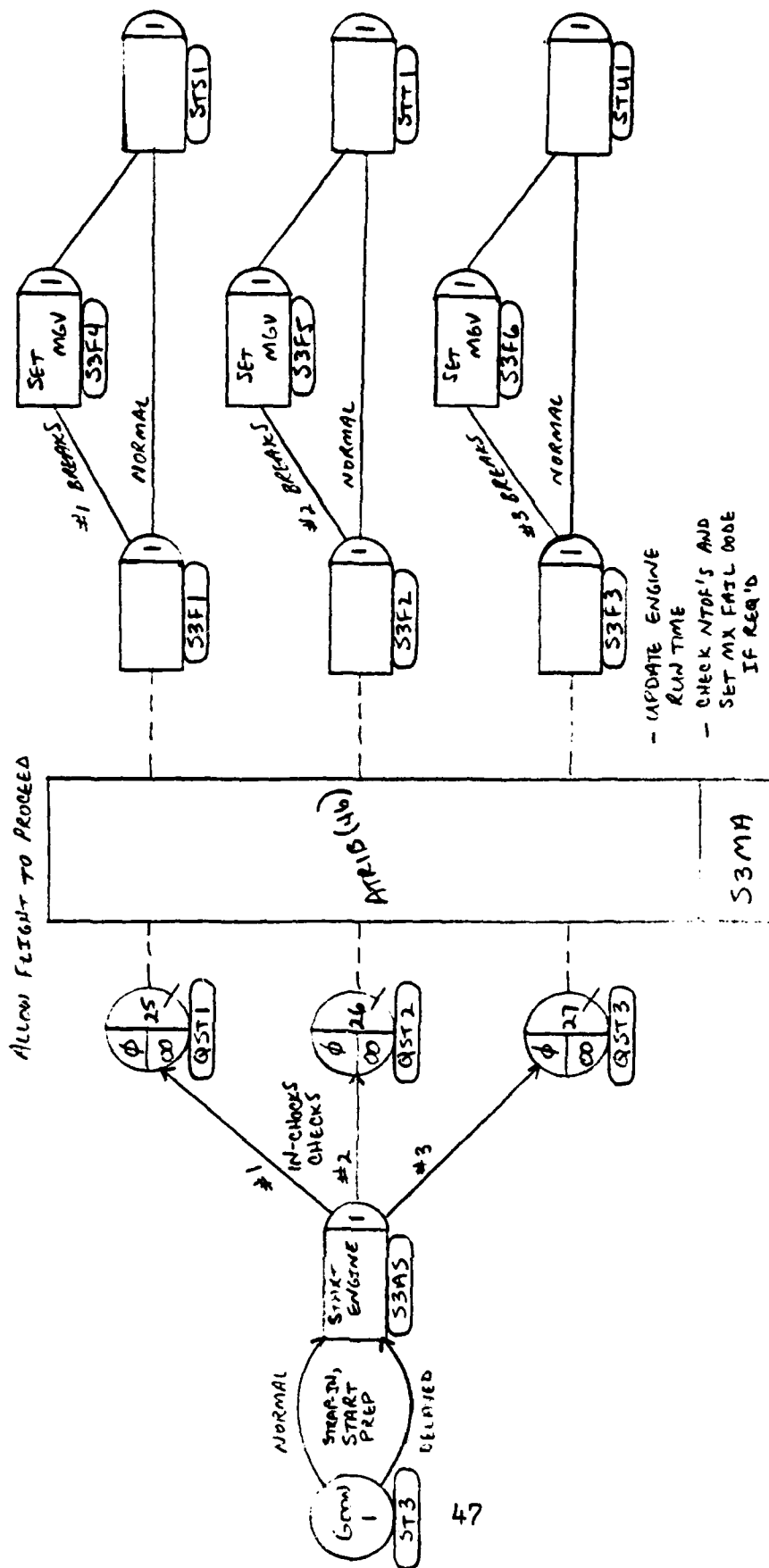


Fig A.5.1 Three-Ship Start

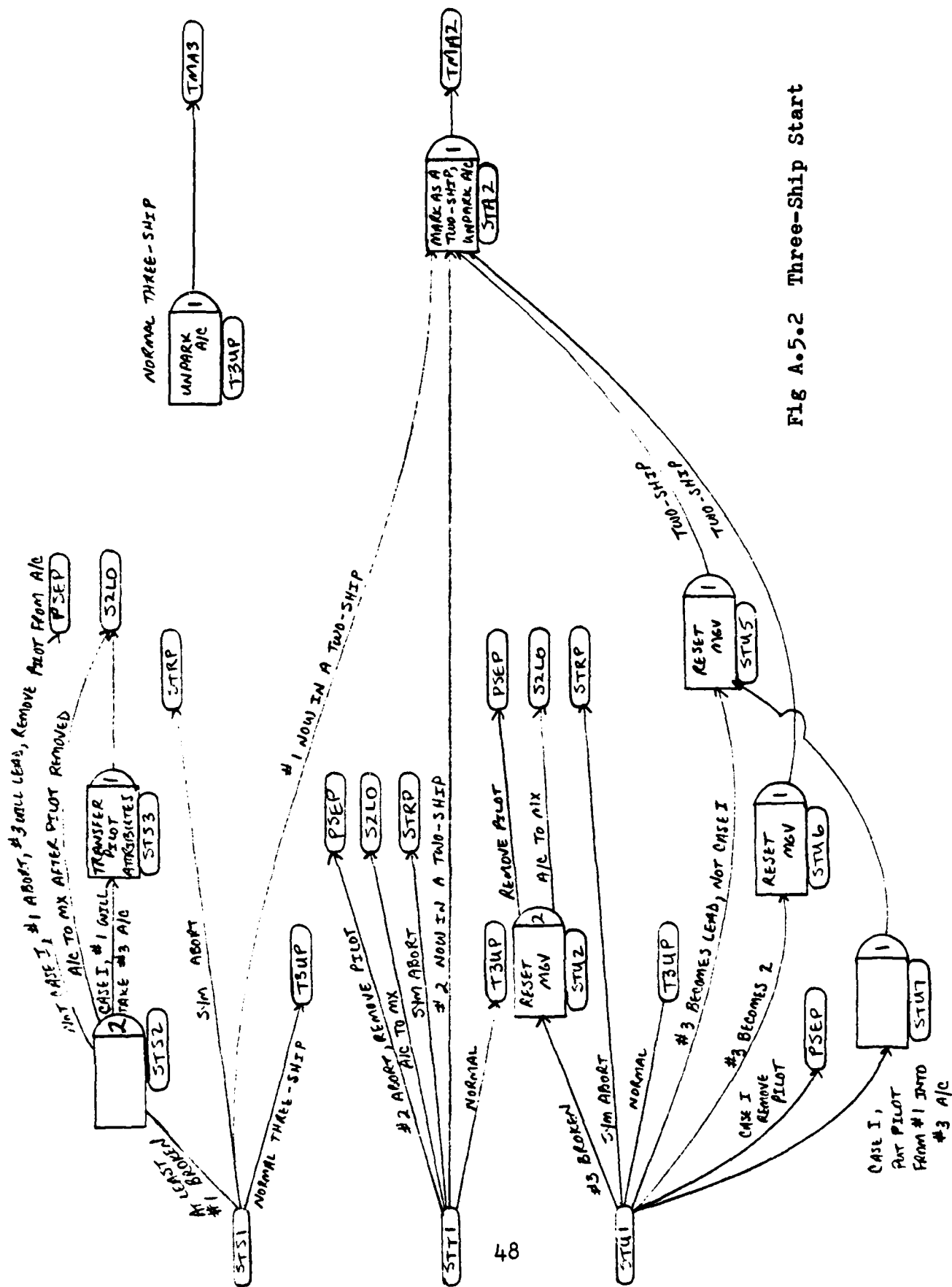


Fig A.5.2 Three-Ship Start

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1471 ; THREE-SHIP TAXI, MARSHALL AND ARM
1472 ; AFTER START THE A/C RELEASE THEIR MAINTENANCE TEAMS AND TAXI
1473 ; TO A MARSHALLING AREA AND THEN TO THE ARMING AREA. A/C
1474 ; ACQUIRE AN ARMING CREW FOR ARMING SERVICE. WHEN ARMING IS
1475 ; COMPLETED THE A/C ARE EVALUATED FOR FAILURE AND ROUTED
1476 ; ACCORDINGLY. THE A/C PROCEED AS A THREE-SHIP, A TWO-SHIP,
1477 ; OR THE MISSION IS SCRUBBED.
1478 ;
1479 TMA3 FREE,MXTEAM/1,1; RELEASE MX TEAM
1480 ACT/43,USERF(63)+TRIAG(2,3,4),
1481 DRAND.GT.XX(67),T3AS; XX(67) - % A/C THAT DELAY TMA
1482 ACT/44,USERF(63)+TRIAG(6,8,10),
1483 ,T3AS; A/C THAT WERE DELAYED
1484 ;
1485 T3AS GOOD,1;
1486 ACT,,ATRI(45).EQ.1,QTM1; A/C 1
1487 ACT,,ATRI(45).EQ.2,QTM2; A/C 2
1488 ACT,,ATRI(45).EQ.3,QTM3; A/C 3
1489 ;
1490 QTM1 QUEUE(30),,,T3MA; WAIT TO REFORM FLT
1491 ;
1492 QTM2 QUEUE(31),,,T3MA;
1493 ;
1494 QTM3 QUEUE(32),,,T3MA;
1495 ;
1496 T3MA MATCH,46,QTM1/T3F1,QTM2/T3F2,
1497 GTM3/T3F3; REFORM FLT
1498 ; UPDATE MISSION STATUS CODE BY A/C
1499 T3F1 ASSIGN,ATRI(8) =TNOW - ATRI(8),
1500 ATRI(14)=ATRI(14)+ATRI(8),
1501 ATRI(7) =ATRI(7) +ATRI(8),
1502 ATRI(18)=USERF(51),
1503 ATRI(8) =TNOW,1;
1504 ACT,,USERF(37).GE.2,T3F4; A/C 1 BROKEN
1505 ACT,.0001,,TMS1; A/C 1 OK
1506 ;
1507 T3F4 ASSIGN,II=ATRI(46),
1508 XX(II)=XX(II)+2,1;
1509 ACT,.0001,,TMS1;
1510 ; UPDATE MISSION STATUS CODE BY A/C
1511 T3F2 ASSIGN,ATRI(8) =TNOW-ATRI(8),
1512 ATRI(14)=ATRI(14)+ATRI(8),
1513 ATRI(7) =ATRI(7) +ATRI(8),
1514 ATRI(18)=USERF(51),
1515 ATRI(8) =TNOW,1;
1516 ACT,,USERF(37).GE.2,T3F5; A/C 2 BROKEN
1517 ACT,.0001,,TMT1; A/C 2 OK
1518 ;
1519 T3F5 ASSIGN,II=ATRI(46),
1520 XX(II)=XX(II)+4,1;

```

```

1521          ACT,.0001,,TMT1;
1522      ;
1523      T3F3 ASSIGN,TRIB(8) =TNOW -TRIB(8);
1524          TRIB(14)=TRIB(14)+TRIB(8);
1525          TRIB(7) =TRIB(7) +TRIB(8);
1526          TRIB(18)=USERF(51);
1527          TRIB(8) =TNOW,1;
1528          ACT,,USERF(37).GE.2,T3F6;      A/C 3 BROKEN
1529          ACT,.0001,,TMU1;      A/C 3 OK
1530      ;
1531      T3F6 ASSIGN,II=TRIB(46);
1532          XX(II)=XX(II)+5,1;
1533          ACT,.0001,,TMU1;
1534      ;
1535      TMS1 ASSIGN,II=TRIB(46),1;      EVALUATE MISSION CODE TO DETERMINE
1536          ACT,,XX(II).EQ.2.OR.XX(II).EQ.6.OR.      STATUS OF FLIGHT (EACH A/C)
1537          XX(II).EQ.7.OR.
1538          XX(II).EQ.11,T2L0;      A/C 1 FAIL
1539          ACT,,XX(II).EQ.9,TMZZ;      A/C 1 SYM ABORT
1540          ACT,,XX(II).EQ.4.OR.
1541          XX(II).EQ.5,TMZ3;      A/C 1 NOW IN A TWO SHIP
1542          ACT,,XX(II).EQ.0,T03;      A/C 1 STILL IN A THREE SHIP
1543
1544      T2L0 ASSIGN,TRIB(13)=7;
1545          XX(95)=USERF(124),2;
1546          ACT,USERF(67),USERF(12).EQ.1,PSEP;
1547          ACT,,USERF(12).EQ.1,T2LR;
1548          ACT,,MAIN;
1549      ;
1550      T2LR ASSIGN,TRIB(32)=0,1;
1551          ACT,,MAIN;
1552      ;
1553      TMZZ ASSIGN,TRIB(13)=7,1;
1554          ACT,,DEA6;      GO TO REFUEL
1555
1556      TMT1 ASSIGN,II=TRIB(46),1;
1557          ACT,,XX(II).EQ.4.OR.XX(II).EQ.6.OR.
1558          XX(II).EQ.9.OR.
1559          XX(II).EQ.11,T2L0;      A/C 2 FAIL
1560          ACT,,XX(II).EQ.7.OR.XX(II).EQ.2.AND.
1561          TRIB(43).EQ.1,TMZ2;      A/C 2 SYM ABORT
1562          ACT,,XX(II).EQ.5.OR.XX(II).EQ.2.AND.
1563          TRIB(43).NE.1,TMZ3;      A/C 2 PART OF A TWO SHIP
1564          ACT,,XX(II).EQ.0,T03;      A/C 2 STILL IN A THREE SHIP
1565
1566      TMU1 ASSIGN,II=TRIB(46),1;
1567          ACT,,XX(II).EQ.5.OR.XX(II).EQ.7.OR.
1568          XX(II).EQ.9.OR.
1569          XX(II).EQ.11,TMU2;      A/C 3 FAIL
1570          ACT,,XX(II).EQ.6.OR.XX(II).EQ.2.AND.

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1571	ATRIB(43).EQ.1,TMZ2;	A/C 3 SYN ABORT
1572	ACT,,XX(II).EQ.2.AND.	
1573	ATRIB(43).NE.1,TMU4;	A/C 3 FLT LEAD OF A TWO SHIP
1574	ACT,,XX(II).EQ.4,TMU5;	A/C 3 PART OF A TWO SHIP
1575	ACT,,XX(II).EQ.0,T03;	A/C 3 STILL IN A THREE SHIP
1576		
1577	TMU2 ASSIGN,XX(II)=0,1;	A/C TO MX
1578	ACT,,T2L0;	
1579		
1580	TMU4 ASSIGN,ATRIB(45)=1,XX(II)=0,1;	CHANGE A/C 3 TO LEAD A/C
1581	ACT,,TMZ3;	
1582		
1583	TMU5 ASSIGN,ATRIB(45)=2,XX(II)=0,1;	CHANGE A/C 3 TO POSITION 2
1584	ACT,,TMZ3;	
1585		
1586	TMZ3 ASSIGN,ATRIB(44)=2,1;	CHANGE FLT TO A TWO-SHIP
1587	ACT,,T02;	

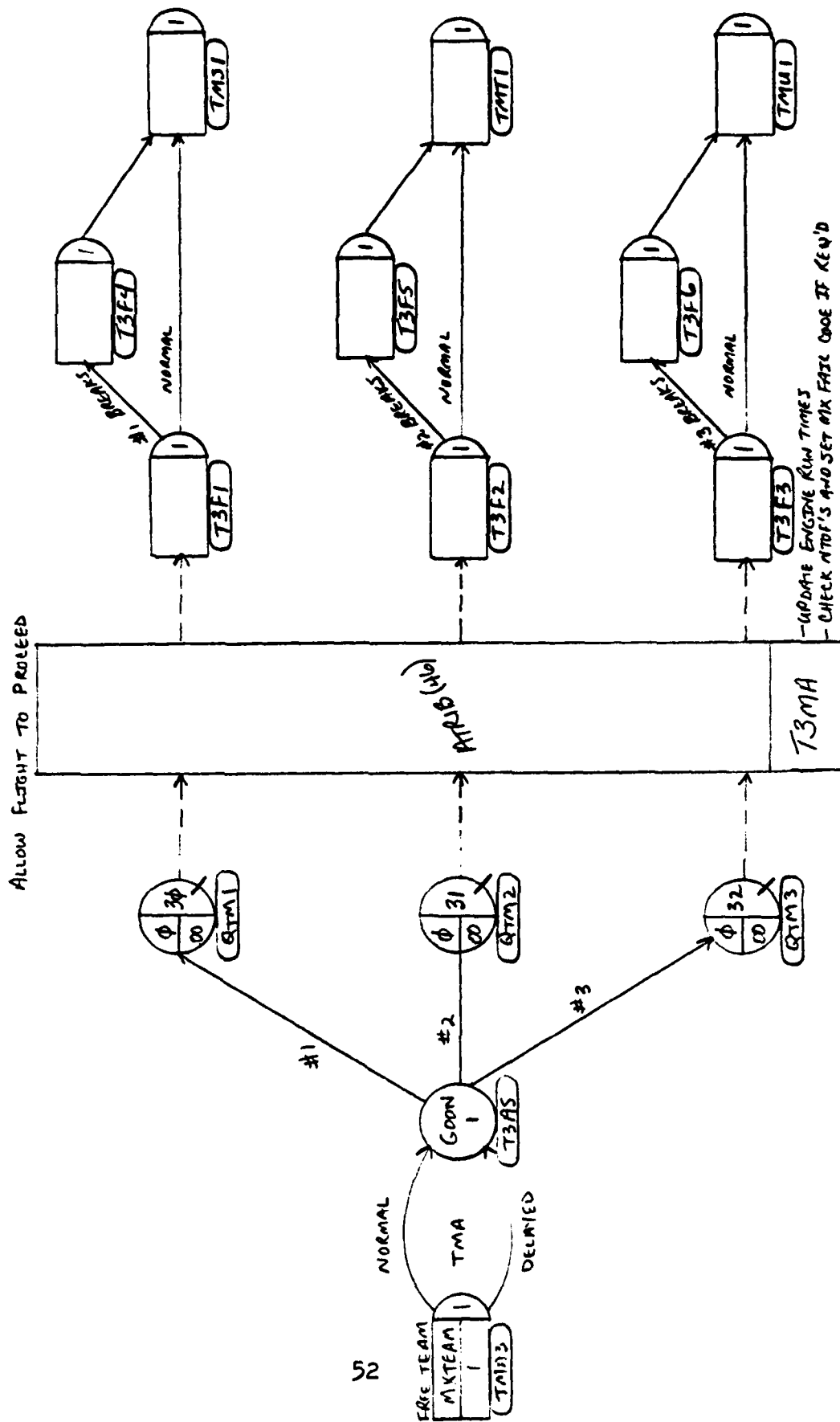


Fig A.6.0.1 Three-Ship Taxi, Marshall, and Arm

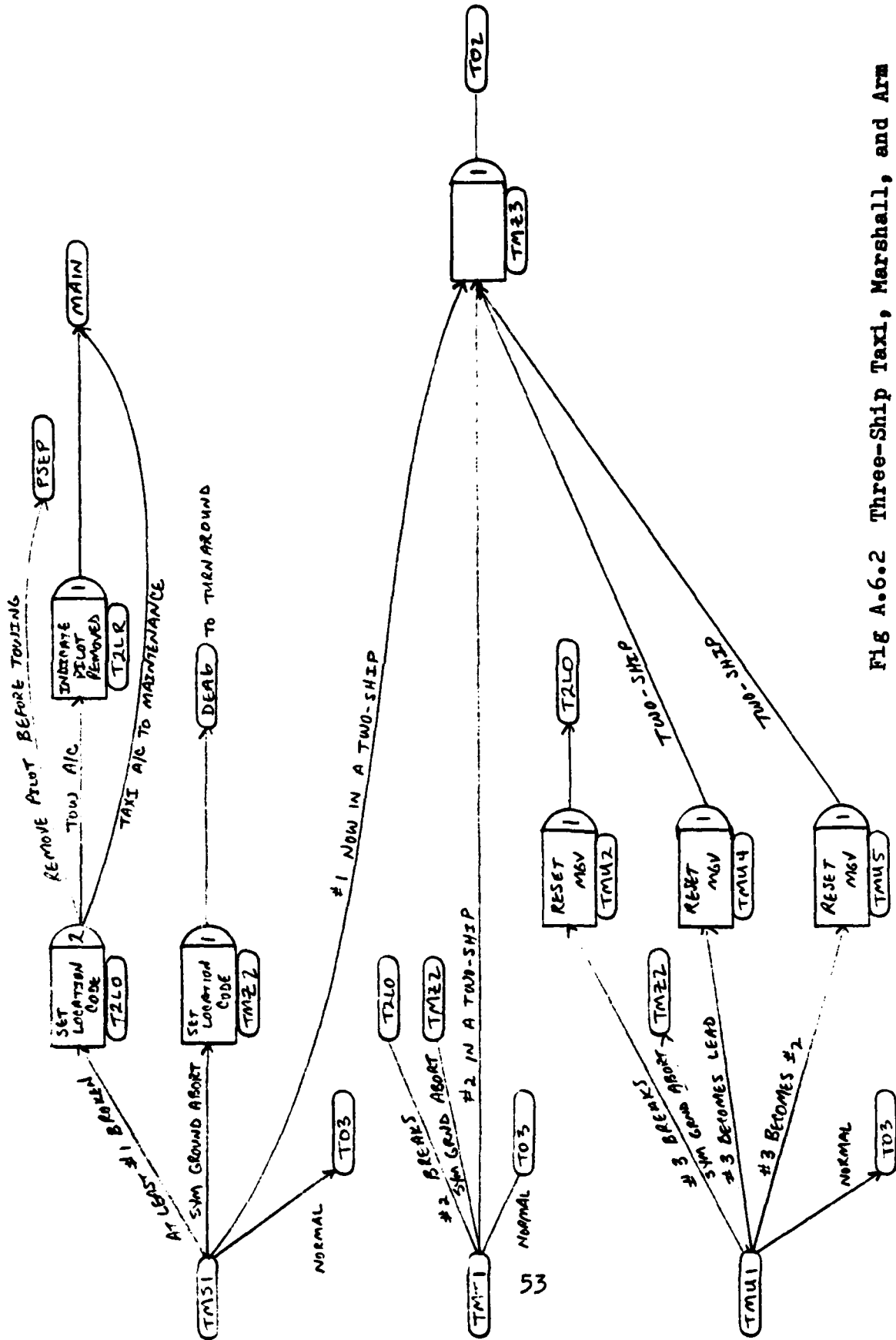


Fig A.6.2 Three-Ship Taxi, Marshall, and Arm

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1588      ; THREE-SHIP TAKEOFF
1589      ; THE LEAD A/C ACQUIRES THE RUNWAY FOR THE FLIGHT AND THE FLIGHT
1590      ; TAXIS ON THE RUNWAY FOR RUN-UP CHECKS AND TAKEOFF. THERE IS A
1591      ; POSSIBILITY OF DELAY. A/C ARE EVALUATED FOR FAILURES AND THERE
1592      ; IS THE ENTIRE GAMUT OF POSSIBILITIES FROM SIMPLE MAINTENANCE
1593      ; ABORT OF ONE A/C TO SYMPATHETIC AIR ABORT. IF ALL 3 A/C LAUNCH
1594      ; THEY PROCEED TO REJOIN (REJ3), IF ONLY 2 THEY REJOIN (REJ2),
1595      ; ELSE THE MISSION IS SCRUBBED.
1596      ;
1597      TO3 GOON,1;          ROUTINE FOR FLT TO GET THE RNWY
1598          ACT,,ATTRIB(45).EQ.1,TOA3;
1599          ACT,,,TOG3;
1600      ;
1601      TOA3 AWAIT(45),RUNWAY/1,1;
1602          ACT,.0001,DRAND.GT.XX(68),TOG3;
1603          ACT,TRIAC(.5,1,2),,TOG3;
1604      ;
1605      TOG3 GOON,1;
1606          ACT,,ATTRIB(45).EQ.1,QT01;
1607          ACT,,ATTRIB(45).EQ.2,QT02;
1608          ACT,,ATTRIB(45).EQ.3,QT03;
1609      ;
1610      ;
1611      QT01 QUEUE(35),,,,L3MA;          WAIT TO REFORM FLIGHT
1612      ;
1613      QT02 QUEUE(36),,,,L3MA;
1614      ;
1615      QT03 QUEUE(37),,,,L3MA;
1616      ;
1617      L3MA MATCH,46,QT01/L3F1,
1618          QT02/L3F2,QT03/L3F3;          REFORM FLIGHT
1619      ;          UPDATE MISSION STATUS CODE BY A/C
1620      L3F1 ASSIGN,ATTRIB(8)=TNOW-ATTRIB(8),
1621          ATTRIB(8)=ATTRIB(8)+1,
1622          ATTRIB(14)=ATTRIB(14)+ATTRIB(8),
1623          ATTRIB(7)=ATTRIB(7)+ATTRIB(8),
1624          ATTRIB(18)=USERF(51),
1625          ATTRIB(8)=TNOW,1;
1626          ACT,,USERF(37).GE.2,L3F4;          A/C 1 BROKEN
1627          ACT,.0001,,TOS1;          A/C 1 OK
1628      ;
1629      L3F4 ASSIGN,II=ATTRIB(46),
1630          XX(II)=XX(II)+2,1;
1631          ACT,.0001,,TOS1;
1632      ;          UPDATE MISSION STATUS CODE BY A/C
1633      L3F2 ASSIGN,ATTRIB(8)=TNOW-ATTRIB(8),
1634          ATTRIB(8)=ATTRIB(8)+1,
1635          ATTRIB(14)=ATTRIB(14)+ATTRIB(8),
1636          ATTRIB(7)=ATTRIB(7)+ATTRIB(8),
1637          ATTRIB(18)=USERF(51),

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1638             ATRIB(8)=TNOW,1;
1639             ACT,,USERF(37).GE.2,L3F5;           A/C 2 BROKEN
1640             ACT,.0001,,TOT1;                   A/C 2 OK
1641             ;
1642             L3F5 ASSIGN,II=ATRI(46),
1643             XX(II)=XX(II)+4,1;
1644             ACT,.0001,,TOT1;
1645             ;
1646             L3F3 ASSIGN,ATRI(8)=TNOW-ATRI(8),
1647             ATRIB(8)=ATRI(8)+1,
1648             ATRIB(14)=ATRI(14)+ATRI(8),
1649             ATRIB(7)=ATRI(7)+ATRI(8),
1650             ATRIB(18)=USERF(51),
1651             ATRIB(8)=TNOW,1;
1652             ACT,,USERF(37).GE.2,L3F6;           A/C 3 BROKEN
1653             ACT,.0001,,TOU1;                   A/C 3 OK
1654             ;
1655             L3F6 ASSIGN,II=ATRI(46),
1656             XX(II)=XX(II)+5,1;
1657             ACT,.0001,,TOU1;
1658             ;
1659             TOS1 ASSIGN,II=ATRI(46),1;           EVALUATE A/C 1 STATUS
1660             ACT,1,XX(II).EQ.2.OR.XX(II).EQ.6.OR.
1661             XX(II).EQ.7.OR.
1662             XX(II).EQ.11,M3GA;                   A/C 1 BROKEN ON RUNWAY
1663             ACT,1,XX(II).EQ.9,FRS3;               A/C 1 SYM AIR ABORT
1664             ACT,1,XX(II).EQ.4.OR.
1665             XX(II).EQ.5,FRT2;                     A/C 1 PART OF A TWO SHIP
1666             ACT,,XX(II).EQ.0,FRW3;               A/C 1 STILL IN A THREE SHIP
1667             ;
1668             TOT1 ASSIGN,II=ATRI(46),1;           EVALUATE A/C 2 STATUS
1669             ACT,1,XX(II).EQ.4.OR.XX(II).EQ.6.OR.
1670             XX(II).EQ.9.OR.
1671             XX(II).EQ.11,DEA3;                   A/C 2 BROKEN ON RUNWAY
1672             ACT,,XX(II).EQ.7.AND.
1673             ATRIB(43).NE.1,TOFY;                 A/C 2 SYM AIR ABORT
1674             ACT,1,XX(II).EQ.2.AND.ATRI(43).EQ.1.OR.
1675             XX(II).EQ.7.AND.
1676             ATRIB(43).EQ.1,TOZ2;                 A/C 2 SYM GRND ABORT
1677             ACT,,XX(II).EQ.5.OR.XX(II).EQ.2.AND.
1678             ATRIB(43).NE.1,TOZ1;                 A/C 2 PART OF A TWO SHIP
1679             ACT,,XX(II).EQ.0,REJ3;               A/C 2 STILL IN A THREE SHIP
1680             ;
1681             TOU1 ASSIGN,II=ATRI(46),1;           EVALUATE STATUS OF A/C 3
1682             ACT,,XX(II).EQ.5.OR.XX(II).EQ.7.OR.
1683             XX(II).EQ.9.OR.
1684             XX(II).EQ.11,TOU2;                   A/C 3 BROKEN ON RUNWAY
1685             ACT,1,XX(II).EQ.6.OR.XX(II).EQ.2.AND.
1686             ATRIB(43).EQ.1,TOZ2;                 A/C 3 SYM GRND ABORT
1687             ACT,,XX(II).EQ.2.AND.

```

1688	ATRIB(43).NE.1,TOU4;	A/C 3 IS NOW FLT LEAD IN A TWO SHIP
1689	ACT,,XX(II).EQ.4,TOU5;	A/C 3 NOW IN A TWO SHIP
1690	ACT,,XX(II).EQ.0,REJ3;	A/C 3 STILL IN A THREE SHIP
1691	;	
1692	TOU2 ASSIGN,XX(II)=0,1;	
1693	ACT,1,,DEA3;	
1694	;	
1695	TOU4 ASSIGN,ATRIB(45)=1,XX(II)=0,1;	CHANGE A/C 3 TO FLT LEAD (A/C 1)
1696	ACT,,,TOZ1;	
1697	;	
1698	TOU5 ASSIGN,ATRIB(45)=2,XX(II)=0,1;	CHANGE A/C 3 TO A/C POSITION 2
1699	ACT,,,TOZ1;	
1700	;	
1701	TOZ1 ASSIGN,ATRIB(44)=2,1;	CHANGE NUMBER OF A/C IN MSN TO 2
1702	ACT,,,REJ2;	
1703	;	
1704	FRW3 FREE,RUNWAY/1,1;	RELEASE RUNWAY - REJOIN THREE SHIP
1705	ACT,,,REJ3;	
1706	;	
1707	FRT2 FREE,RUNWAY/1,1;	RELEASE RUNWAY - REJOIN TWO SHIP
1708	ACT,,,TOZ1;	
1709	;	
1710	M3GA FREE,RUNWAY/1,1;	RELEASE RUNWAY - GO TO DEARM
1711	ACT,,,DEA3;	
1712	;	
1713	TOZ2 ASSIGN,ATRIB(17)=1,1;	SYM GRND ABORT
1714	ACT,,,DEA3;	
1715	;	
1716	FRS3 FREE,RUNWAY/1,1;	SYM AIR ABORT
1717	ACT,,,TOFY;	
1718	;	

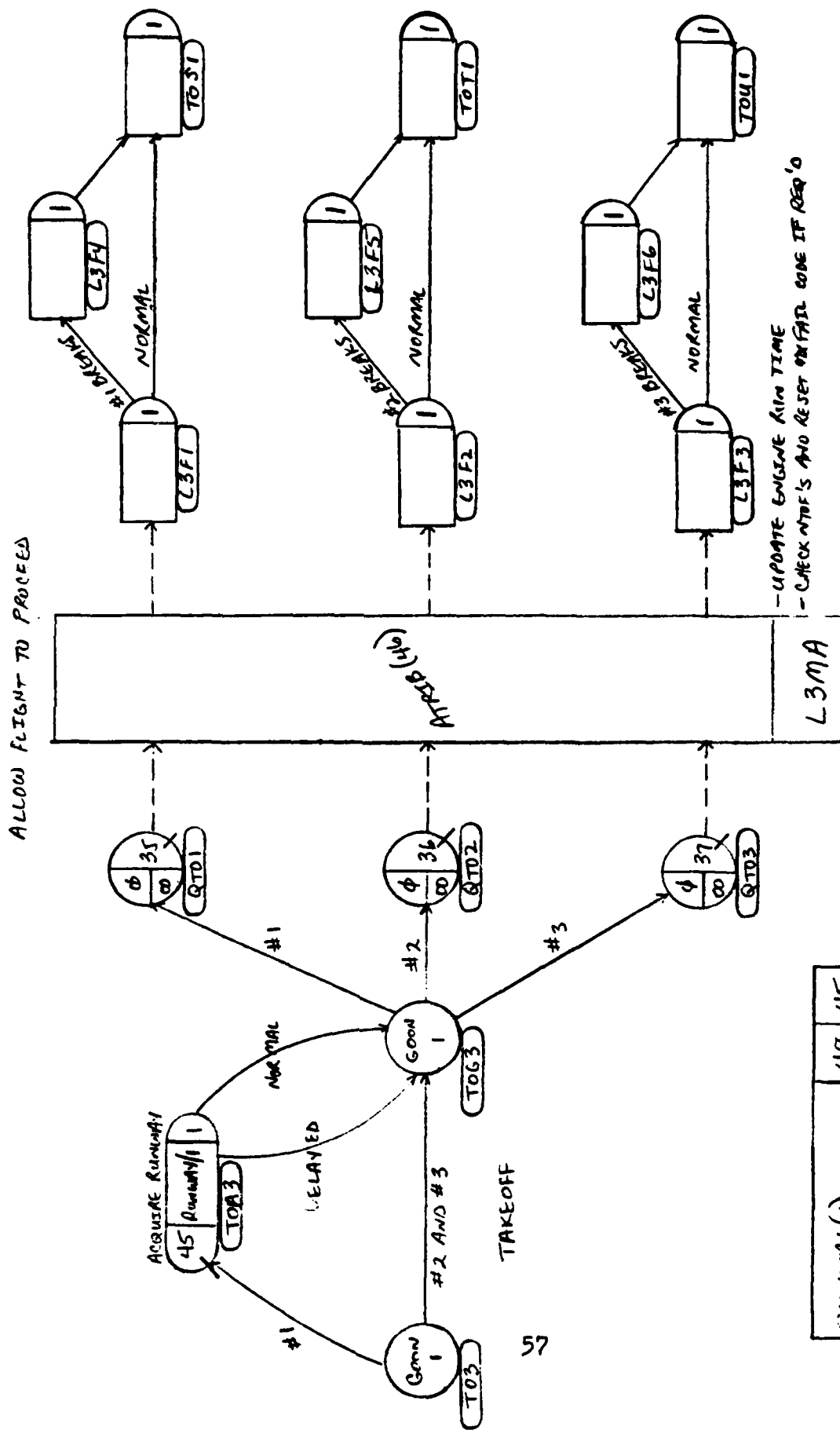


Fig A.7.1 Three-Ship Takeoff

45	47	45
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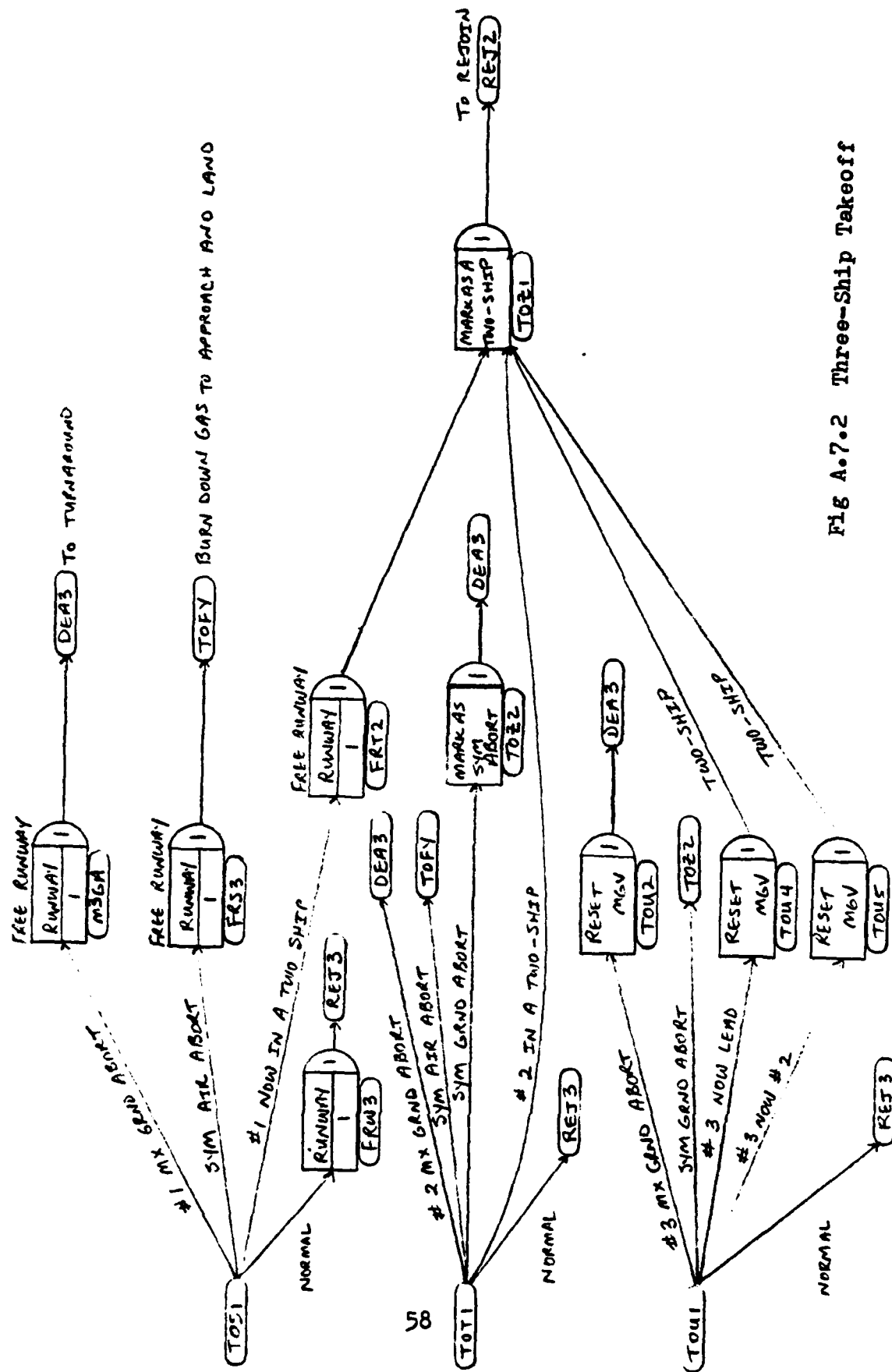


Fig A.7.2 Three-Ship Takeoff

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1719      ; THREE-SHIP REJOIN
1720      ; AFTER TAKEOFF THE A/C REJOIN BEFORE PROCEEDING ON THEIR MISSION.
1721      ; A/C ARE EVALUATED FOR FAILURES BEFORE BEING ALLOWED TO PROCEED
1722      ; ON THE MISSION. BROKEN A/C ARE ROUTED ACCORDINGLY. THE RE-
1723      ; SULT MAY BE A THREE-SHIP MISSION, A TWO-SHIP MISSION, OR THE
1724      ; THE MISSION MAY BE SCRUBBED WITH A SYMPATHETIC AIR ABORT. IF
1725      ; AN AIRCRAFT AIR ABORTS IT MAY JETTISON AND/OR BURN DOWN GAS
1726      ; PRIOR TO LANDING. AIRCRAFT WHICH EXPERIENCE FAILURES IN THE
1727      ; AIR WILL CRASH IF THE FAILURES ARE SEVERE ENOUGH IN CERTAIN
1728      ; SYSTEMS OR COMBINATIONS OF SYSTEMS. SEE THE FORTRAN LISTING
1729      ; FOR THE SPECIFIC FAILURE LEVELS AND COMBINATIONS OF SYSTEMS.
1730      ;
1731      REJ3 ASSIGN,XX(95)=USERF(121),
1732              XX(94)=XX(94) + 1,
1733              XX(95)=USERF(122),1;
1734      ACT,TRIAC(1,2,3),
1735              DRAND.GT.XX(69),R3ST;      NORMAL REJOIN
1736      ACT,TRIAC(2,3,4),,R3ST;      DELAY IN REJOIN
1737      ;
1738      R3ST GOON,1;
1739      ACT,,ATRI(45).EQ.1,QRE1;
1740      ACT,,ATRI(45).EQ.2,QRE2;
1741      ACT,,ATRI(45).EQ.3,QRE3;
1742      ;
1743      QRE1 QUEUE(40),,,,R3MA;      WAIT TO REFORM FLIGHT
1744      ;
1745      QRE2 QUEUE(41),,,,R3MA;
1746      ;
1747      QRE3 QUEUE(42),,,,R3MA;
1748      ;
1749      R3MA MATCH,46,QRE1/R3F1,      UPDATE MISSION STATUS CODE BY A/C
1750              QRE2/R3F2,QRE3/R3F3;
1751      ;
1752      R3F1 ASSIGN,ATRI(8)=TNOW-ATRI(8),
1753              ATRI(15)=ATRI(8),
1754              ATRI(7)=ATRI(7)+ATRI(8),
1755              ATRI(18)=USERF(51),
1756              ATRI(8)=TNOW,1;
1757      ACT,,USERF(37).GE.2,R3F4;      A/C 1 BROKEN
1758      ACT,,.0001,,RES1;      A/C 1 OK
1759      ;      UPDATE MISSION STATUS CODE BY A/C
1760      R3F4 ASSIGN,II=ATRI(46),
1761              XX(II)=XX(II)+2,1;      SET UP TO GO TO MX
1762      ACT,,.0001,,RES1;
1763      ;
1764      R3F2 ASSIGN,ATRI(8)=TNOW-ATRI(8),
1765              ATRI(15)=ATRI(8),
1766              ATRI(7)=ATRI(7)+ATRI(8),
1767              ATRI(18)=USERF(51),
1768              ATRI(8)=TNOW,1;

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1769          ACT,,USERF(37).GE.2,R3F5;      A/C 2 BROKEN
1770          ACT,,0001,,RET1;                A/C 2 OK
1771          ;                               UPDATE MISSION STATUS CODE BY A/C
1772          R3F5 ASSIGN,II=ATRIB(46),
1773          XX(II)=XX(II)+4,1;                SET UP TO GO TO MX
1774          ACT,,0001,,RET1;
1775          ;
1776          R3F3 ASSIGN,ATRIB(8)=TNOW-ATRIB(8),
1777          ATRIB(15)=ATRIB(8),
1778          ATRIB(7)=ATRIB(7)+ATRIB(8),
1779          ATRIB(18)=USERF(51),
1780          ATRIB(8)=TNOW,1;
1781          ACT,,USERF(37).GE.2,R3F6;      A/C 3 BROKEN
1782          ACT,,0001,,REU1;                A/C 3 OK
1783          ;
1784          R3F6 ASSIGN,II=ATRIB(46),
1785          XX(II)=XX(II)+5,1;                SET UP TO GO TO MX
1786          ACT,,0001,,REU1;
1787          ;
1788          RES1 ASSIGN,II=ATRIB(46),1;
1789          ACT,,XX(II).EQ.2.OR.XX(II).EQ.6.OR.
1790          XX(II).EQ.7.OR.
1791          XX(II).EQ.11,REFY;      GO TO MX
1792          ACT,,XX(II).EQ.9,R2S3;    SYM AIR ABORT
1793          ACT,,XX(II).EQ.4.OR.
1794          XX(II).EQ.5,REZ1;      REJOIN AS TWO-SHIP
1795          ACT,,0001,XX(II).EQ.0,MISS;  THREE-SHIP MISSION
1796          ;
1797          RET1 ASSIGN,II=ATRIB(46),1;
1798          ACT,,XX(II).EQ.4.OR.XX(II).EQ.6.OR.
1799          XX(II).EQ.9.OR.
1800          XX(II).EQ.11,REFY;      GO TO MX
1801          ACT,,XX(II).EQ.7.OR.XX(II).EQ.2.AND.
1802          ATRIB(43).EQ.1,R2S3;    SYM AIR ABORT
1803          ACT,,XX(II).EQ.5.OR.XX(II).EQ.2.AND.
1804          ATRIB(43).NE.1,REZ1;    REJOIN AS TWO-SHIP
1805          ACT,,0001,XX(II).EQ.0,MISS;  THREE-SHIP MISSION
1806          ;
1807          REU1 ASSIGN,II=ATRIB(46),1;
1808          ACT,,XX(II).EQ.5.OR.XX(II).EQ.7.OR.
1809          XX(II).EQ.9.OR.
1810          XX(II).EQ.11,REU2;      GO TO MX
1811          ACT,,XX(II).EQ.6.OR.XX(II).EQ.2.AND.
1812          ATRIB(43).EQ.1,R2S3;    SYM AIR ABORT
1813          ACT,,XX(II).EQ.2.AND.
1814          ATRIB(43).NE.1,REU4;    BECOME LEAD OF TWO-SHIP
1815          ACT,,XX(II).EQ.4,REU5;    BECOME 2 IN A TWO-SHIP
1816          ACT,,0001,XX(II).EQ.0,MISS;  THREE-SHIP MISSION
1817          ;
1818          REU2 ASSIGN,XX(II)=0,1;

```

1819	ACT,,,REFY;	GO TO MX
1820	;	
1821	REU4 ASSIGN,TRIB(45)=1,XX(11)=0,1;	CHANGE A/C 3 TO LEAD OF TWO-SHIP
1822	ACT,,,REZ1;	
1823	;	
1824	REU5 ASSIGN,TRIB(45)=2,XX(11)=0,1;	CHANGE A/C 3 TO 2 IN A TWO-SHIP
1825	ACT,,,REZ1;	
1826	REZ1 ASSIGN,TRIB(44)=2,1;	CHANGE FLT TO A TWO-SHIP
1827	ACT,.0001,,MISS;	
1828	;	

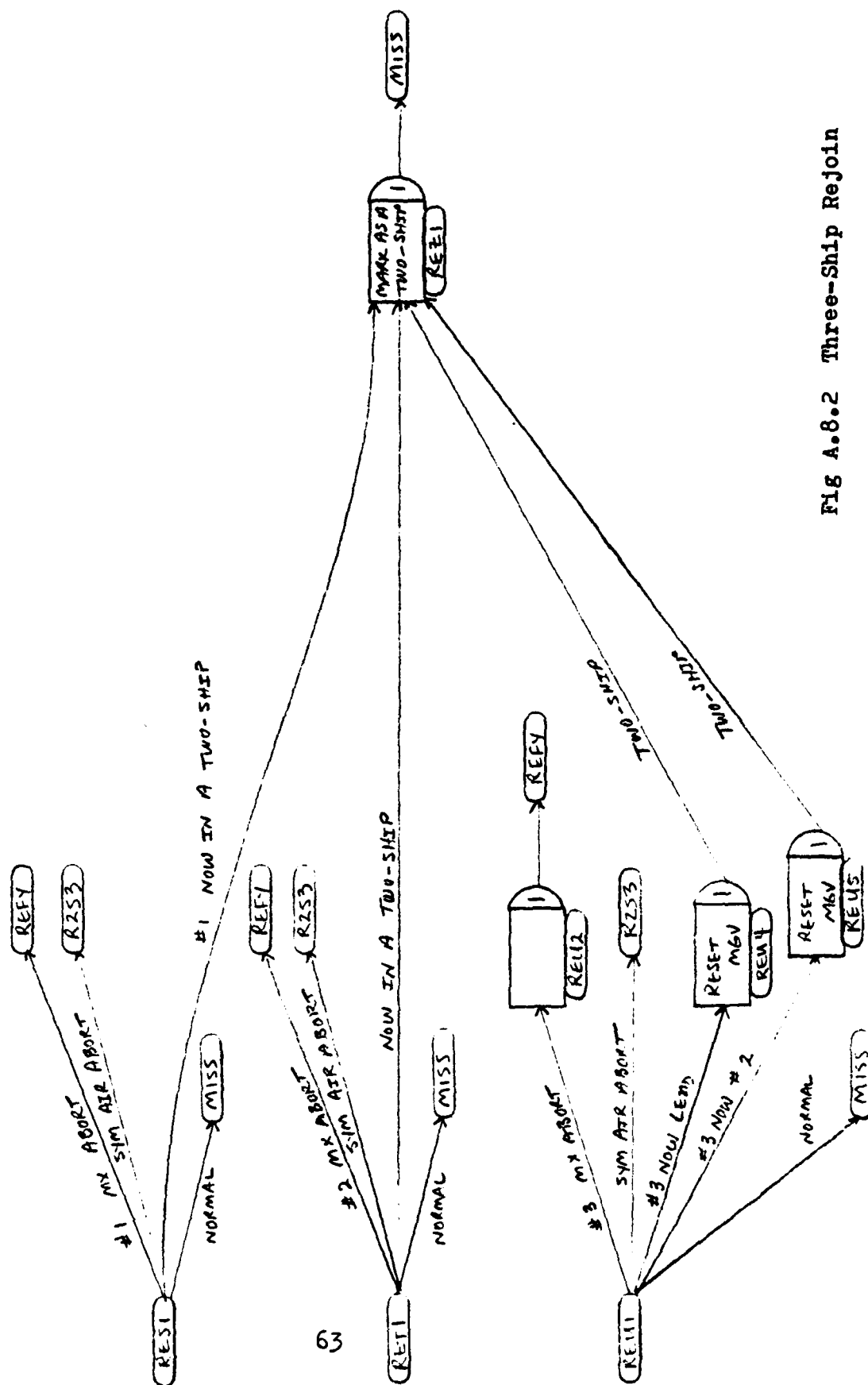


Fig A.8.2 Three-Ship Rejoin

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1829 ; TWO-SHIP START
1830 ; TIME IS PROVIDED FOR STRAP-IN AND PRE-START COCKPIT CHECKS. A/C
1831 ; THEN ARE STARTED AND THE IN THE CHOCKS CHECKS ARE PERFORMED.
1832 ; ONCE ENGINES ARE STARTED THE ENGINE RUN TIME IS TRACKED SO THE
1833 ; AMOUNT OF RUN TIME CAN BE COMPARED TO WOTF TO DETERMINE WHEN
1834 ; AN A/C FAILS. AFTER ALL CHECKS THE A/C ARE EVALUATED FOR ANY
1835 ; FAILURES AND ROUTED ACCORDINGLY. IF ONE ABORTS THE OTHER IS A
1836 ; SYMPATHETIC ABORT.
1837 ;
1838 ST2 GOON,1;
1839 ACT,TRIAC(2,3,4),
1840 DRAND.GT.XX(66),S2AS; NORMAL ACTIVITY DURATION
1841 ACT,TRIAC(4,5,6),,S2AS; DELAYED ACTIVITY DURATION
1842 ;
1843 S2AS ASSIGN,ATRI(8)=TNOW,1; START OF A/C OPERATIONS TIME
1844 ACT,TRIAC(2,3,4),
1845 ATRIB(45).EQ.1,QST4; IN CHOCKS PRE-TAXI CHECKS
1846 ACT,TRIAC(2,3,4),
1847 ATRIB(45).EQ.2,QST5;
1848 ;
1849 QST4 QUEUE(28),,,S2MA; WAIT TO REFORM FLT
1850 ;
1851 QST5 QUEUE(29),,,S2MA;
1852 ;
1853 S2MA MATCH,46,QST4/S2F1,QST5/S2F2; REFORM FLT
1854 ;
1855 S2F1 ASSIGN,ATRI(8)=TNOW-ATRI(8),
1856 ATRIB(14)=ATRI(14)+ATRI(8),
1857 ATRIB(7)=ATRI(7)+ATRI(8),
1858 ATRIB(18)=USERF(51),
1859 ATRIB(8)=TNOW,1; UPDATE A/C OPERATING TIME
1860 ACT,,USERF(37).GE.2,S2F3; A/C 1 BROKEN
1861 ACT,.0001,,S2S1; A/C 1 OK
1862 ;
1863 S2F3 ASSIGN,II=ATRI(46),
1864 XX(II)=XX(II)+2,1;
1865 ACT,.0001,,S2S1;
1866 ;
1867 S2F2 ASSIGN,ATRI(8)=TNOW-ATRI(8),
1868 ATRIB(14)=ATRI(14)+ATRI(8),
1869 ATRIB(7)=ATRI(7)+ATRI(8),
1870 ATRIB(18)=USERF(51),
1871 ATRIB(8)=TNOW,1;
1872 ACT,,USERF(37).GE.2,S2F4; A/C 2 BROKEN
1873 ACT,.0001,,S2S2; A/C 2 OK
1874 ;
1875 S2F4 ASSIGN,II=ATRI(46),
1876 XX(II)=XX(II)+4,1;
1877 ACT,.0001,,S2S2;
1878 ;

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```

1879      SZS1 ASSIGN,II=ATRIB(46),
1880          XX(95)=USERF(124),2;
1881      ACT,,XX(II).EQ.0,TZUP;
1882      ACT,,XX(II).EQ.4,STRP;
1883      ACT,,XX(II).EQ.2,OR.
1884          XX(II).EQ.6,SZLO;
1885      ACT,,XX(II).EQ.2,OR.
1886          XX(II).EQ.6,PSEP;
1887  ;
1888      SZS2 ASSIGN,II=ATRIB(46),
1889          XX(95)=USERF(124),2;
1890      ACT,,XX(II).EQ.4,OR.
1891          XX(II).EQ.6,PSEP;
1892      ACT,,XX(II).EQ.4,OR.
1893          XX(II).EQ.6,SZLO;
1894      ACT,,XX(II).EQ.2,STRP;
1895      ACT,,XX(II).EQ.0,TZUP;
1896  ;
1897      SZLO ASSIGN,ATRIB(13)=ATRIB(1),
1898          ATRIB(32)=0,1;
1899      ACT,,SMXC;
1900  ;
1901      TZUP ASSIGN,ATRIB(3)=USERF(22),
1902          ATRIB(1)=USERF(17),1;
1903      ACT,,TMA2;
1904  ;
1905      STRP ASSIGN,XX(95)=USERF(124),2;
1906      ACT,,PSOC;
1907      ACT,,PSEP;
1908  ;

```

PATH TO SQ READY POOL (ARPX)
 PILOT SEPARATED -

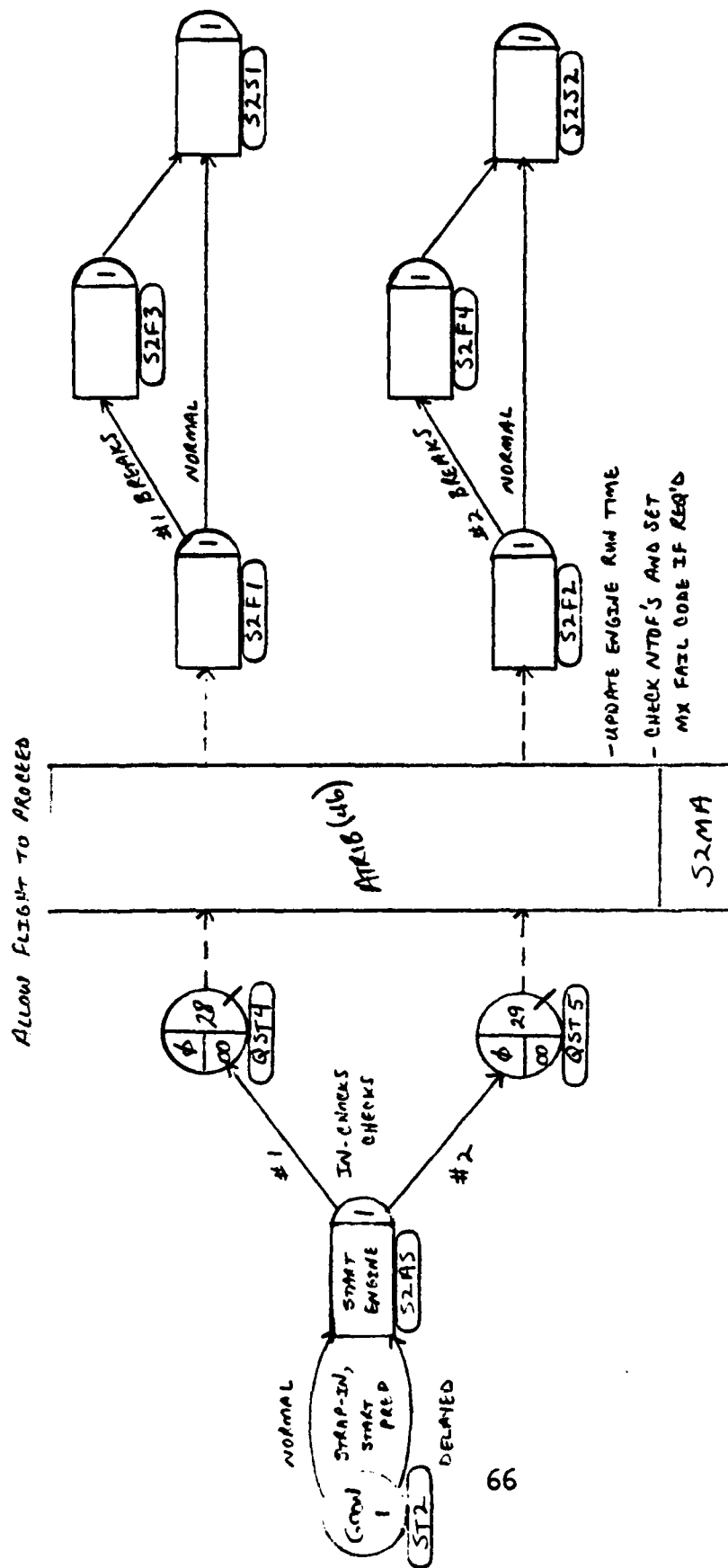


Fig A.9.1 Two-Ship Start

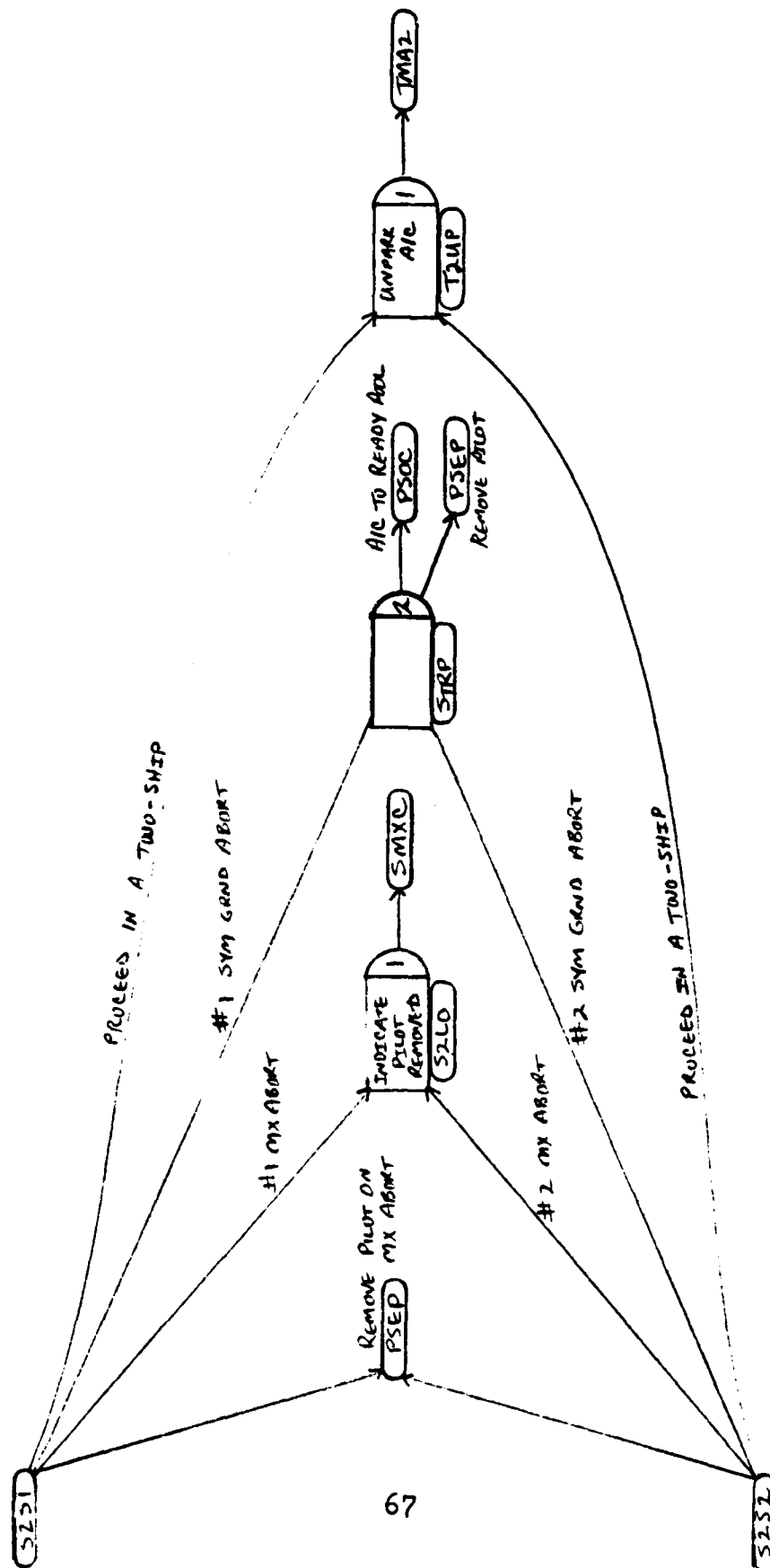


Fig A.9.2 Two-Ship Start

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1909      ; TWO-SHIP TAXI, MARSHALL AND ARM
1910      ; A/C FREE UP THEIR CREW CHIEF WHEN THEY TAXI TO MARSHALLING
1911      ; AND THEN ON TO THE ARMING AREA. THE A/C ACQUIRE AN ARMING CREW
1912      ; AND ARE ARMED. AFTER ARMING AIRCRAFT ARE EVALUATED FOR FAIL-
1913      ; URES AND ARE ROUTED ACCORDINGLY. IF ONE A/C ABORTS THE OTHER IS A
1914      ; SYMPATHETIC ABORT.
1915      ;
1916      TMA2 FREE,MXTEAM/1,1;
1917      ACT/45,USERF(63)+TRIAC(2,3,4),
1918      DRAND.GT.XX(67),T2ST;      NORMAL TMA ACTIVITY DURATION
1919      ACT/46,USERF(63)+TRIAC(6,8,10),,
1920      T2ST;      DELAYED TMA ACTIVITY DURATION
1921      ;
1922      T2ST GOON,1;
1923      ACT,,ATTRIB(45).EQ.1,QTM4;
1924      ACT,,ATTRIB(45).EQ.2,QTM5;
1925      ;
1926      QTM4 QUEUE(33),,,T2MA;      WAIT TO REFORM FLIGHT
1927      ;
1928      QTM5 QUEUE(34),,,T2MA;
1929      ;
1930      T2MA MATCH,46,QTM4/T2F1,QTM5/T2F2;      REFORM FLIGHT
1931      ;
1932      T2F1 ASSIGN,ATTRIB(8)=TNOW-ATTRIB(8),
1933      ATTRIB(14)=ATTRIB(14)+ATTRIB(8),
1934      ATTRIB(7)=ATTRIB(7)+ATTRIB(8),
1935      ATTRIB(18)=USERF(51),
1936      ATTRIB(8)=TNOW,1;
1937      ACT,,USERF(37).GE.2,T2F3;      A/C 1 BROKEN
1938      ACT,.0001,,T2S1;      A/C 1 OK
1939      ;
1940      T2F3 ASSIGN,II=ATTRIB(46),
1941      XX(II)=XX(II)+2,1;
1942      ACT,.0001,,T2S1;
1943      ;
1944      T2F2 ASSIGN,ATTRIB(8)=TNOW-ATTRIB(8),
1945      ATTRIB(14)=ATTRIB(14)+ATTRIB(8),
1946      ATTRIB(7)=ATTRIB(7)+ATTRIB(8),
1947      ATTRIB(18)=USERF(51),
1948      ATTRIB(8)=TNOW,1;
1949      ACT,,USERF(37).GE.2,T2F4;      A/C 2 BROKEN
1950      ACT,.0001,,T2S2;      A/C 2 OK
1951      ;
1952      T2F4 ASSIGN,II=ATTRIB(46),
1953      XX(II)=XX(II)+4,1;
1954      ACT,.0001,,T2S2;
1955      ;
1956      T2S1 ASSIGN,II=ATTRIB(46),1;
1957      ACT,,XX(II).EQ.0,T02;
1958      ACT,,XX(II).EQ.4,T2FU;

```

1959		ACT,,XX(II).EQ.2.OR.
1960		XX(II).EQ.6,T2LO;
1961	;	
1962	T2S2 ASSIGN,II=ATIB(46),1;	
1963		ACT,,XX(II).EQ.4.OR.
1964		XX(II).EQ.6,T2LO;
1965		ACT,,XX(II).EQ.2,T2FU;
1966		ACT,,XX(II).EQ.0,T02;
1967	;	
1968	T2FU ASSIGN,ATIB(13)=7,1;	
1969		ACT,,,DEA6;
1970	;	

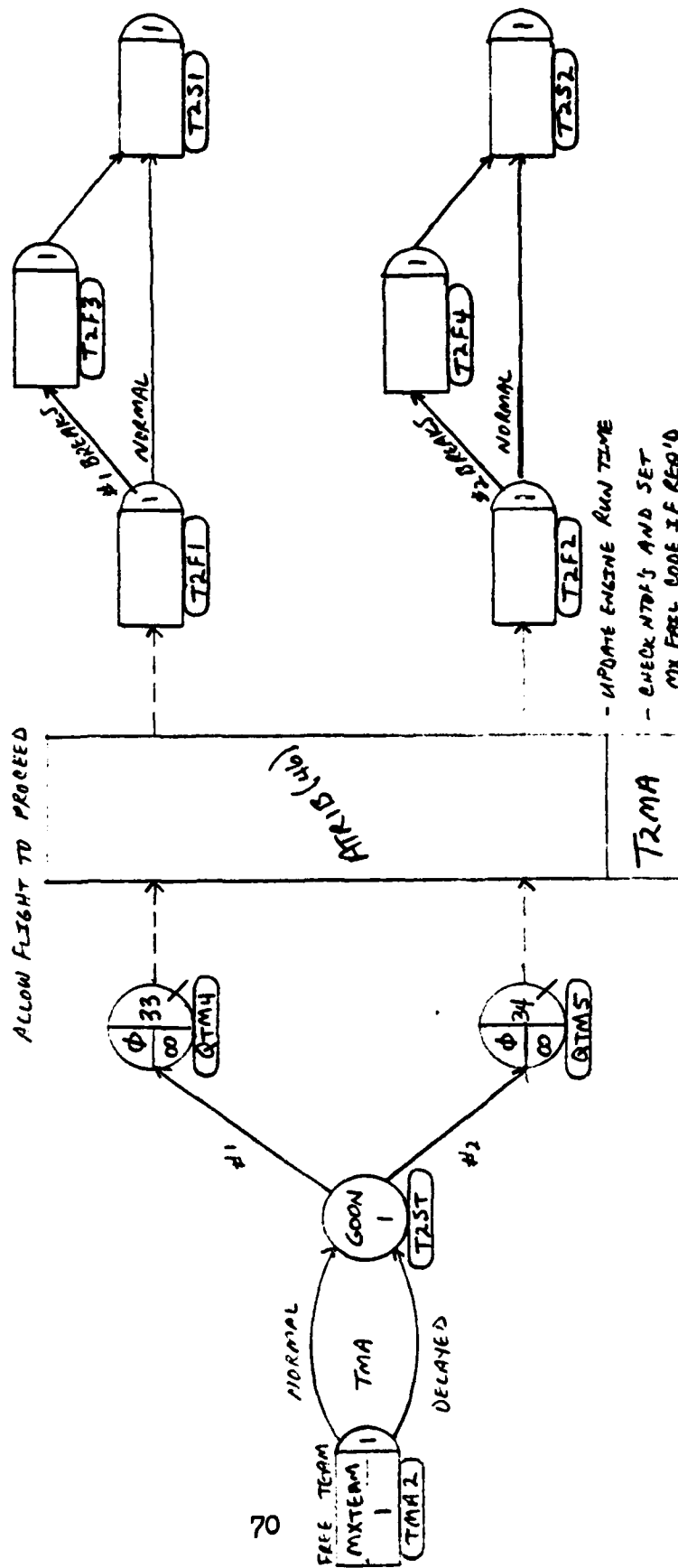


Fig A.10.1 Two-Ship Taxi, Marshall, and Arm

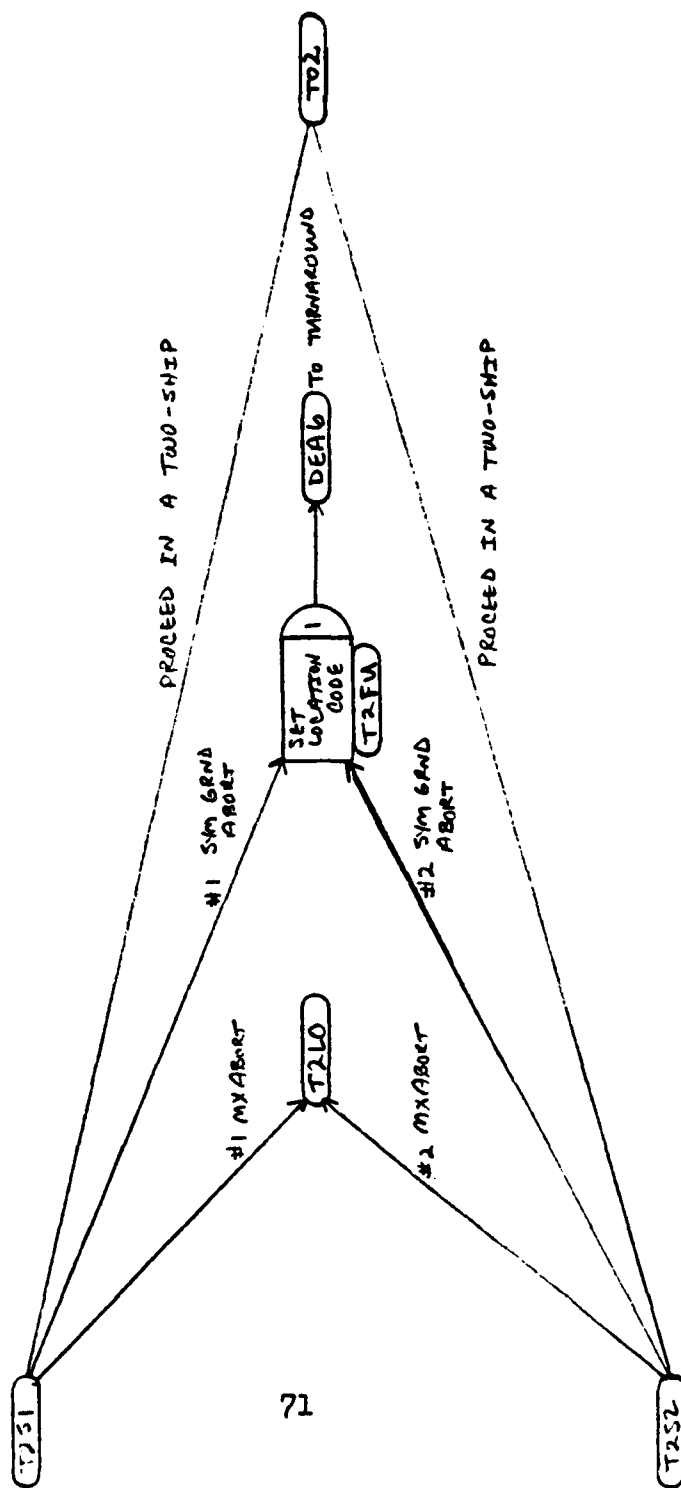


Fig A.10.2 Two-Ship Taxi, Marshall, and Arm

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1971      ; TWO-SHIP TAKEOFF
1972      ; THE FLIGHT LEAD ACQUIRES THE RUNWAY FOR THE FLIGHT AND THE
1973      ; FLIGHT TAKES THE ACTIVE AFTER FREEING THEIR ARMING CREWS.
1974      ; RUN-UP CHECKS ARE PERFORMED AND THERE IS A POSSIBILITY OF
1975      ; DELAY. A/C ARE EVALUATED FOR FAILURES AND ROUTED ACCORD-
1976      ; INGLY. THE LEAD A/C MAY BE A SYMPATHETIC AIR ABORT, BUT
1977      ; IN ANY CASE IF ONE A/C ABORTS THE OTHER IS SYMPATHETIC. IF
1978      ; LEAD GROUND ABORTS TWO IS A SYMPATHETIC GROUND ABORT. THERE
1979      ; IS NO POSSIBILITY OF TWO TAKING OFF IF LEAD ABORTS.
1980      ;
1981      TO2 GOON,1;
1982      ACT,,ATTRIB(45).EQ.1,TOA2;
1983      ACT,,TOG2;
1984      ;
1985      TOA2 AWAIT(46),RUNWAY/1,1;
1986      ACT,.0001,DRAND.GT.XX(68),TOG2;
1987      ACT,TRIAG(.5,1,2),,TOG2;
1988      ;
1989      TOG2 GOON,1;
1990      ACT,,ATTRIB(45).EQ.1,QT04;
1991      ACT,,ATTRIB(45).EQ.2,QT05;
1992      ;
1993      QT04 QUEUE(38),,,,L2MA;          WAIT TILL FLT IS READY TO TAKEOFF
1994      ;
1995      QT05 QUEUE(39),,,,L2MA;
1996      ;
1997      L2MA MATCH,46,QT04/L2F1,QT05/L2F2;  FLT TAKEOFF
1998      ;
1999      L2F1 ASSIGN,ATTRIB(8)=TNOW-ATTRIB(8),
2000      ATTRIB(14)=ATTRIB(14)+ATTRIB(8),
2001      ATTRIB(7)=ATTRIB(7)+ATTRIB(8),
2002      ATTRIB(18)=USERF(51),
2003      ATTRIB(8)=TNOW,1;
2004      ACT,,USERF(37).GE.2,L2F3;          A/C 1 BROKEN
2005      ACT,.0001,,L2S1;                  A/C 1 OK
2006      ;
2007      L2F3 ASSIGN,II=ATTRIB(46),
2008      XX(II)=XX(II)+2,1;
2009      ACT,.0001,,L2S1;
2010      ;
2011      L2F2 ASSIGN,ATTRIB(8)=TNOW-ATTRIB(8),
2012      ATTRIB(14)=ATTRIB(14)+ATTRIB(8),
2013      ATTRIB(7)=ATTRIB(7)+ATTRIB(8),
2014      ATTRIB(18)=USERF(51),
2015      ATTRIB(8)=TNOW,1;
2016      ACT,,USERF(37).GE.2,L2F4;
2017      ACT,.0001,,L2S2;
2018      ;
2019      L2F4 ASSIGN,II=ATTRIB(46),
2020      XX(II)=XX(II)+4,1;

```

2021	ACT,0001,,L2S2;	
2022	;	
2023	L2S1 ASSIGN,II=ATRI(46),1;	
2024	ACT,1,XX(II).EQ.4,FRS2;	
2025	ACT,XX(II).EQ.0,FRW2;	
2026	ACT,1,XX(II).EQ.2,OR.	
2027	XX(II).EQ.6,M2GA;	
2028	;	
2029	FRS2 FREE,RUNWAY/1,1;	
2030	ACT,,,TOFY;	
2031	;	
2032	TOFY ASSIGN,XX(95)=USERF(121),	
2033	XX(94)=XX(94) + 1,	
2034	ATRI(17)=2,XX(95)=USERF(122),1;	
2035	ACT,TRIAC(10,15,20),,TOCK;	
2036	;;	
2037	TOCK ASSIGN,ATRI(8)=TNOW-ATRI(8),	
2038	ATRI(7)=ATRI(7)+ATRI(8),	
2039	ATRI(18)=USERF(51),	
2040	ATRI(15)=ATRI(8),	
2041	ATRI(8)=TNOW,1;	
2042	;	THE CODE ABOVE DOES THE FOLLOWING
2043	;	TIME FLOWN SYM AIR ABORT
2044	;	TOTAL OPERATING TIME
2045	;	UPDATE FAILURE CODE
2046	;	TEMP STORAGE OF FLIGHT TIME
2047	;	RESET ATRI(8)
2048	ACT,,USERF(13).EQ.1,CRSH;	A/C CRASHES (FAILURE CODE)
2049	ACT,,,APPR;	A/C RECOVERS TO APPROACH
2050	;	
2051	FRW2 FREE,RUNWAY/1,1;	FLY TWO SHIP
2052	ACT,,,REJ2;	
2053	;	
2054	M2GA FREE,RUNWAY/1,1;	MX GRND ABORT A/C 1
2055	ACT,,,DEA3;	
2056	;	
2057	L2S2 ASSIGN,II=ATRI(46),1;	
2058	ACT,1,XX(II).EQ.4,OR.	
2059	XX(II).EQ.6,DEA3;	MX GRND ABORT A/C 2
2060	ACT,XX(II).EQ.0,REJ2;	FLY TWO SHIP
2061	ACT,1,XX(II).EQ.2,L2S3;	SYM GRND ABORT A/C 2
2062	;	
2063	L2S3 ASSIGN,ATRI(17)=1,1;	SET SYM GRND ABORT CODE
2064	ACT,,,DEA3;	
2065	;	

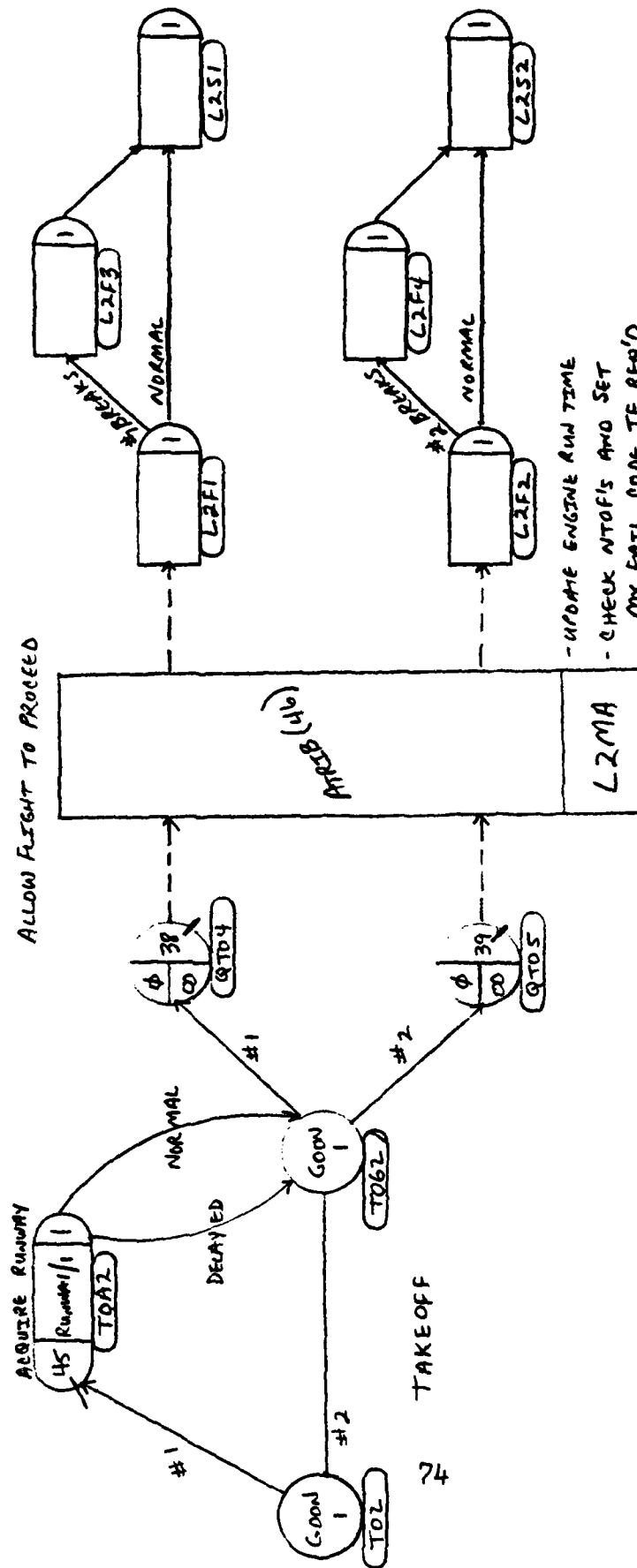


Fig A.11.1 Two-Ship Takeoff


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2066      ; TWO-SHIP REJOIN
2067      ; AFTER TAKEOFF THE A/C REJOIN BEFORE PROCEEDING ON THEIR MISSION.
2068      ; A/C ARE EVALUATED FOR FAILURES BEFORE PROCEEDING ON THE MISSION.
2069      ; A/C THAT BREAK ARE ROUTED ACCORDINGLY AND THE OTHER IS A SYM-
2070      ; PATHETIC AIR ABORT. A/C MAY JETTISON AND/OR BURN DOWN GAS
2071      ; PRIOR TO LANDING, TO GET BELOW MAX CROSS WEIGHT FOR LANDING. A/C
2072      ; MAY CRASH IF THEIR FAILURE IS SERIOUS ENOUGH.
2073      ;
2074      REJ2 ASSIGN,XX(95)=USERF(121),
2075              XX(94)=XX(94) + 1,
2076              XX(95)=USERF(122),1;
2077      ACT,TRIAG(1,2,3),
2078      DRAND.GT.XX(69),R2ST;
2079      ACT,TRIAG(2,3,4),,R2ST;
2080      ;
2081      R2ST GOON,1;
2082      ACT,,ATRI(45).EQ.1,QRE4;
2083      ACT,,ATRI(45).EQ.2,QRE5;
2084      ;
2085      QRE4 QUEUE(43),,,R2MA;          WAIT TO REJOIN FLT
2086      ;
2087      QRE5 QUEUE(44),,,R2MA;
2088      ;
2089      R2MA MATCH,46,QRE4/R2F1,QRE5/R2F2;    REJOIN FLT
2090      ;
2091      R2F1 ASSIGN,ATRI(8)=TNOW-ATRI(8),
2092              ATRI(15)=ATRI(8),
2093              ATRI(7)=ATRI(7)+ATRI(8),
2094              ATRI(18)=USERF(51),
2095              ATRI(8)=TNOW,1;
2096      ACT,,USERF(37).GE.2,R2F3;
2097      ACT,.0001,,R2S1;
2098      ;
2099      R2F3 ASSIGN,II=ATRI(46),
2100              XX(II)=XX(II)+2,1;
2101      ACT,.0001,,R2S1;
2102      ;
2103      R2F2 ASSIGN,ATRI(8)=TNOW-ATRI(8),
2104              ATRI(15)=ATRI(8),
2105              ATRI(7)=ATRI(7)+ATRI(8),
2106              ATRI(18)=USERF(51),
2107              ATRI(8)=TNOW,1;
2108      ACT,,USERF(37).GE.2,R2F4;
2109      ACT,.0001,,R2S2;
2110      ;
2111      R2F4 ASSIGN,II=ATRI(46),
2112              XX(II)=XX(II)+4,1;
2113      ACT,.0001,,R2S2;
2114      ;
2115      R2S1 ASSIGN,II=ATRI(46),1;

```

2116	ACT,,XX(II).EQ.2.OR.	
2117	XX(II).EQ.6,REFY;	MX AIR ABORT
2118	ACT,.0001,XX(II).EQ.0,MISS;	FLY TWO SHIP
2119	ACT,,XX(II).EQ.4,R2S3;	SYMPATHETIC AIR ABORT
2120	;	
2121	REFY GOON,1;	
2122	ACT,TRIAC(10,15,20),,RECK;	
2123	;	
2124	RECK ASSIGN,ATRI(8)=TNOW-ATRI(8),	
2125	ATRI(15)=ATRI(15)+ATRI(8),	
2126	ATRI(7)=ATRI(7)+ATRI(8),	
2127	ATRI(18)=USERF(51),	
2128	ATRI(8)=TNOW,1;	
2129	ACT,,USERF(13).EQ.1,CRSH;	A/C CRASHED
2130	ACT,,APPR;	A/C TO APPROACH FOR LANDING
2131	;	
2132	R2S3 ASSIGN,ATRI(17)=2,1;	ASSIGN SYM AIR ABORT CODE
2133	ACT,,REFY;	
2134	;	
2135	R2S2 ASSIGN,II=ATRI(46),1;	
2136	ACT,,XX(II).EQ.2,R2S3;	SYMPATHETIC AIR ABORT
2137	ACT,.0001,XX(II).EQ.0,MISS;	TWO SHIP ON MISSION
2138	ACT,,XX(II).EQ.4.OR.	
2139	XX(II).EQ.6,REFY;	MX AIR ABORT
2140	;	

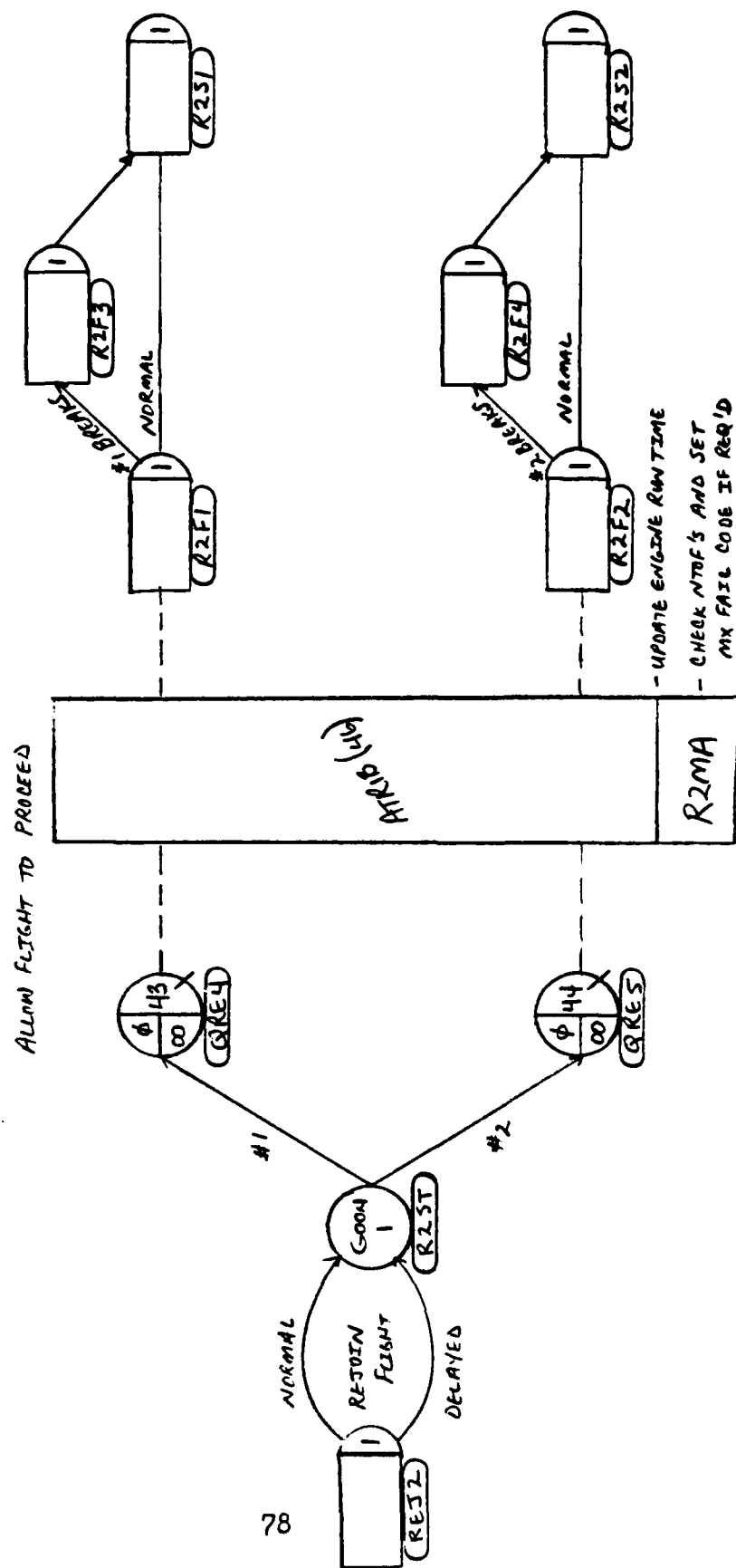


Fig A.12.1 Two-Ship Rejoin

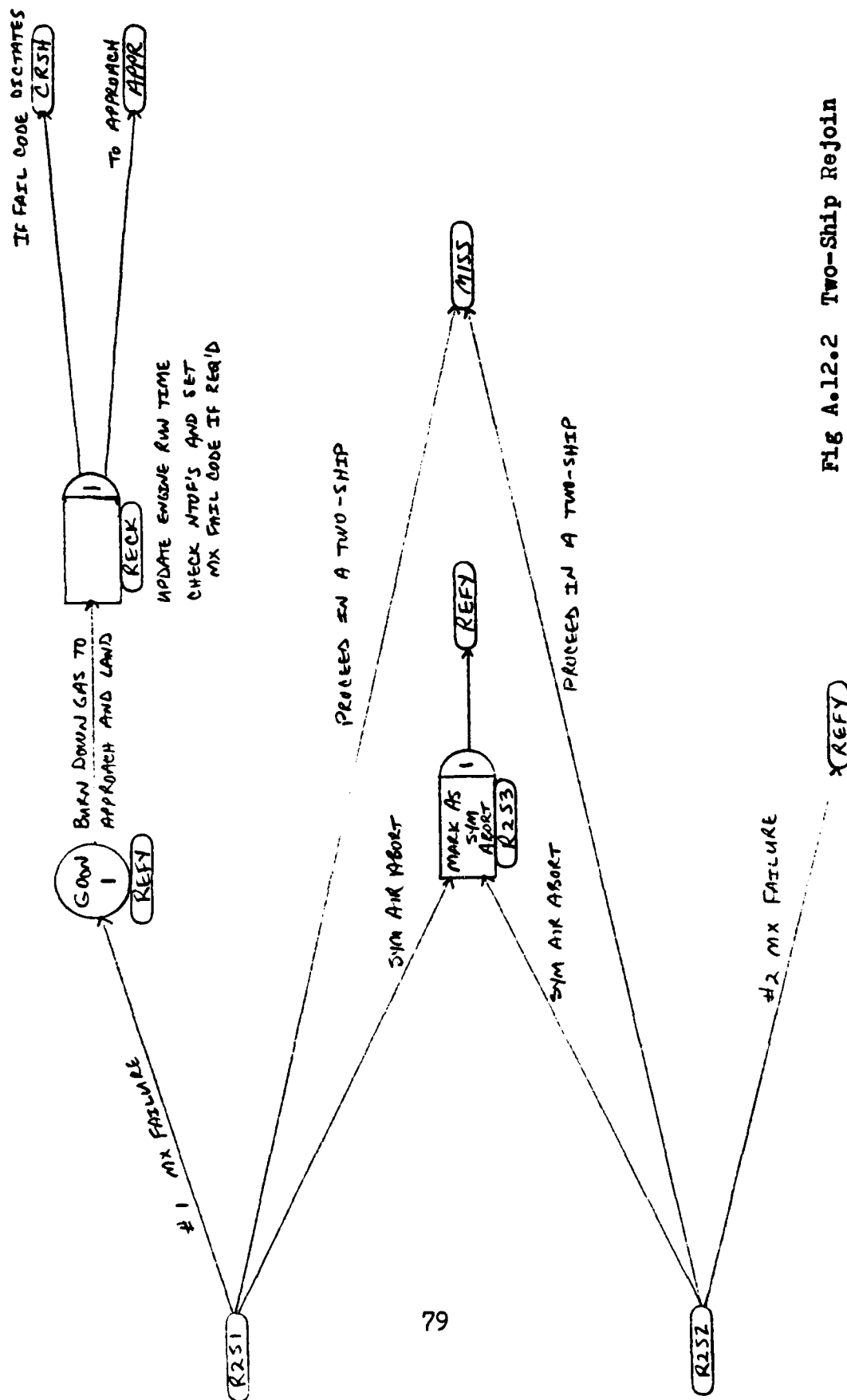


Fig A.12.2 Two-Ship Rejoin

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2141      ; MISSION
2142      ;   FLIGHTS ARE GIVEN THEIR MISSION DURATION IN THIS SECTION. A/C
2143      ;   CAN BE ATTRITED OR SUFFER BATTLE DAMAGE. ORDNANCE IS EXPENDED
2144      ;   AND EXTERNAL FUEL TANKS ARE JETTISONED IF SPECIFIED CONDITIONS
2145      ;   ARE MET. IF AN A/C IS ATTRITED IT IS ROUTED TO THE JUNK FILE
2146      ;   TO BE PRINTED OUT AT THE END OF EACH DAY FOR VALIDATION. THE
2147      ;   SECTION ALSO DETERMINES THE FINAL ORDNANCE CONDITION, WHICH CAN
2148      ;   INCLUDE MALFUNCTIONS WHICH CAUSE DELAYS IN SERVICE AT DEARM.
2149      ;   AT THE COMPLETION OF THE MISSION THE MAINTENANCE FAILURE CODE
2150      ;   IS UPDATED AND EVALUATED IN CONJUNCTION WITH ANY BATTLE DAMAGE
2151      ;   WHICH MAY HAVE OCCURRED. THE A/C MAY CRASH DEPENDING ON THE
2152      ;   THE LEVELS OF FAILURES AND THE PARTICULAR SYSTEMS WHICH ARE
2153      ;   AFFECTED. IF THE AIRCRAFT IS NOT ATTRITED AND DOES NOT CRASH
2154      ;   IT IS ROUTED TO APPROACH (APPR) IN ORDER TO ACQUIRE THE RUNWAY
2155      ;   FOR LANDING.
2156      ;
2157      MISS ASSIGN,XX(92)=USERF(15),1;      FLY MISSION
2158      ACT,,ATRB(16).EQ.99,CRSH;      A/C CRASHED DUE TO ENEMY ACTION
2159      ACT,XX(92),,MIS1;
2160      ;
2161      MIS1 ASSIGN,ATRB(8)=TNOW-ATRB(8),
2162      ATRB(7)=ATRB(7)+ATRB(8),
2163      ATRB(18)=USERF(51),
2164      ATRB(15)=ATRB(15)+ATRB(8),
2165      ATRB(8)=TNOW,1;      CALCULATE MISSION TIME
2166      ;      UPDATE A/C OPERATING TIME
2167      ;      UPDATE FAILURE CODE
2168      ;      UPDATE AIRBORNE TIME
2169      ;      RESET TO TNOW
2170      ACT,,USERF(14).EQ.1,CRSH;      A/C CRASHED DUE TO MX FAILURE
2171      ACT,,APPR;      TO APPROACH
2172      ;
2173      APPR AWAIT(47),RUNWAY/1,1;      CLEARANCE TO LAND ONE A/C
2174      ACT,.5,ATRB(39).NE.0,CL03;
2175      ACT,.5,ATRB(38).NE.0,CL02;
2176      ACT,.5,,CL01;
2177      CL03 COLCT,INTVL(39),PILOTFLYTIME03,,1;
2178      ACT,,LAND;
2179      CL02 COLCT,INTVL(38),PILOTFLYTIME02,,1;
2180      ACT,,LAND;
2181      CL01 COLCT,INTVL(37),PILOTFLYTIME01,,1;
2182      ACT,,LAND;
2183      ;
2184      CRSH ASSIGN,ATRB(2)=USERF(19),1;      DELETES FROM CURRENT INVENTORY
2185      ACT,,CRS2;
2186      ;
2187      CRS2 AWAIT(99),JUNK,1;      FILE STORING CRASHED A/C FOR
2188      ;      STATISTICS FROM DAILY CLEAN UP
2189      ;      ROUTINE
2190      TERMINATE;

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2191

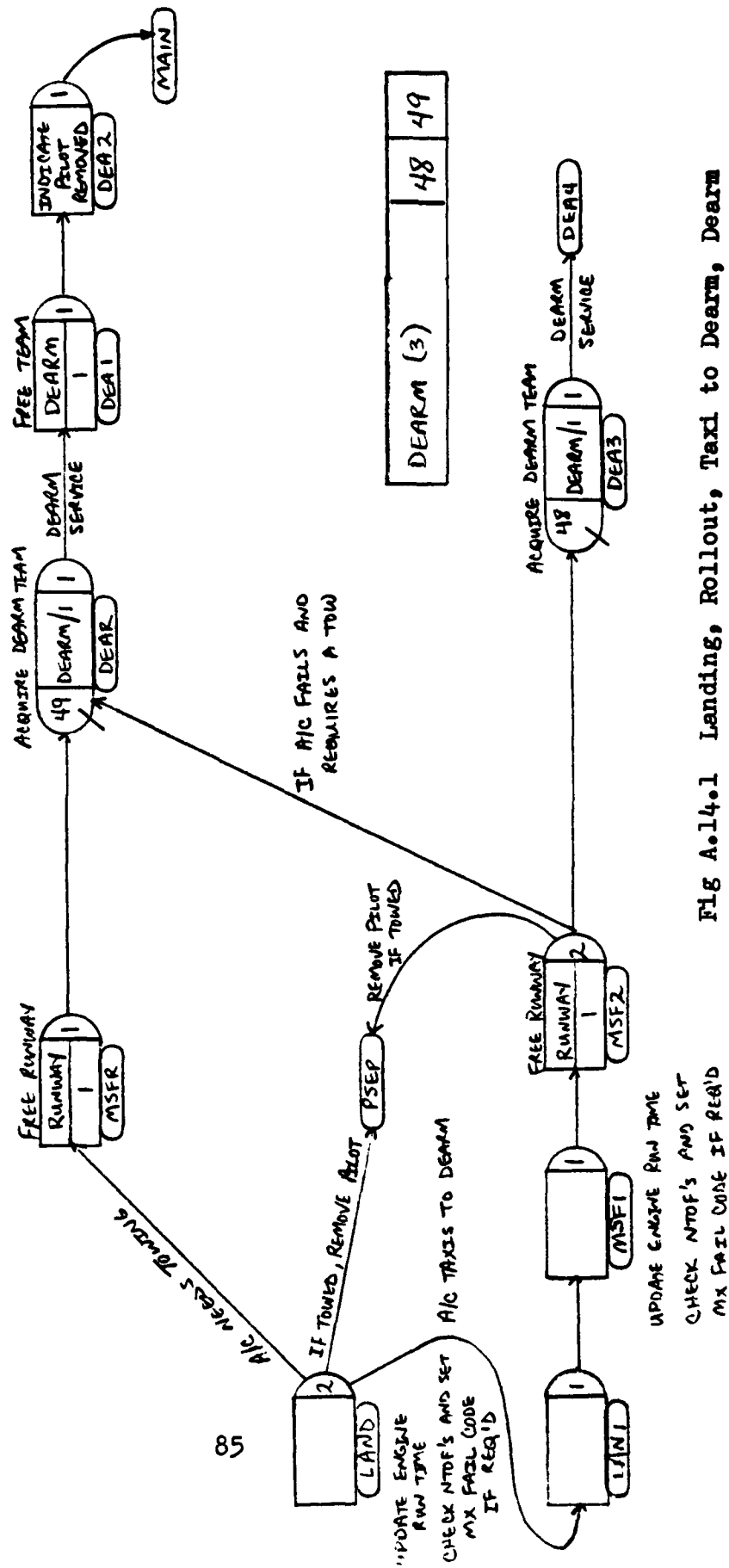
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2192      ; LANDING, ROLLOUT, TAXI TO DEARM, DEARM
2193      ; AFTER THE A/C HAS LANDED AND ROLLED OUT A DETERMINATION IS MADE
2194      ; WHETHER IT CAN TAXI OR IF IT MUST BE TOWED. IF IT MUST BE TOW-
2195      ; ED THE PILOT IS SEPARATED AND RETURNED TO HIS SQUADRON AREA.
2196      ; FOR EITHER CASE THE A/C GOES TO THE DEARMING AREA WHERE IT
2197      ; ACQUIRES A DEARMING CREW. IF THE A/C WAS TOWED AND/OR IT HAD
2198      ; A MAINTENANCE PROBLEM, IT IS ROUTED TO MAINTENANCE FOR REPAIR.
2199      ; A/C THAT CAN TAXI PROCEED TO THEIR SQUADRON AREA AND HOTPIT
2200      ; REFUEL ON THE WAY IF IT IS CONVENIENT FOR THEIR TAXI ROUTE.
2201      ; A/C WHICH HAVE ORDNANCE MALFUNCTIONS ASSIGNED AT MISSION EIPER-
2202      ; IENCE LONGER SERVICE TIMES.
2203      ;
2204      LAND ASSIGN, ATRIB(8)=TNOW-AT(8);
2205      ATRIB(7)=AT(7)+AT(8);
2206      ATRIB(18)=USERF(51);
2207      ATRIB(15)=AT(15)+AT(8);
2208      ATRIB(8)=TNOW, ATRIB(13)=12;
2209      XX(95)=USERF(124);
2210      ATRIB(14)=0;2;          ATRIB(13) IS LOCATION CODE
2211      ACT, TRIAG(5,10,12);
2212      USERF(12).EQ.1,MSFR;    A/C BROKE ON RNWY,TOW TO DEARM
2213      ACT,USERF(67);
2214      USERF(12).EQ.1,PSEP;    FREE PILOT FROM TOWED A/C
2215      ACT,1,,LAN1;            A/C CLEARS RUNWAY NORMALLY
2216      ;
2217      MSFR FREE,RUNWAY/1,1;    A/C HAS CLEARED RUNWAY
2218      ACT,,,DEAR;
2219      ;
2220      DEAR AWAIT(49),DEARM/1,1; WAIT FOR DEARM CREW
2221      ACT/47,USERF(75),,DEA1;
2222      ;
2223      DEA1 FREE,DEARM/1,1;     FREE DEARM CREW
2224      ACT,,,DEA2;
2225      ;
2226      DEA2 ASSIGN,AT(32)=0,AT(13)=10,1;A/C W/O PILOT FROM DEARM AREA
2227      ACT,,,MAIN;
2228      ;
2229      LAN1 ASSIGN,AT(8)=TNOW-AT(8);
2230      ATRIB(7)=AT(7)+AT(8);
2231      ATRIB(18)=USERF(51);
2232      ATRIB(14)=AT(14)+AT(8);
2233      ATRIB(8)=TNOW,AT(13)=10,1; AT(14) IS GROUND RUN TIME
2234      ; AT(13) IS LOCATION CODE
2235      ACT,,,MSF1;             A/C CLEARS RUNWAY
2236      ;
2237      MSF1 ASSIGN,XX(95)=USERF(124),1;
2238      ACT,,,MSF2;
2239      ;
2240      MSF2 FREE,RUNWAY/1,2;
2241      ACT,,USERF(12).EQ.1,DEAR; A/C BROKE,NEEDS TOW FROM DEARM

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2242	ACT,,USERF(12).EQ.1,PSEP;	FREE PILOT FROM TOWED A/C
2243	ACT,,,DEA3;	A/C OK
2244	;	
2245	DEA3 AWAIT(48),DEARM/1,1;	WAIT FOR DEARM CREW
2246	ACT/48,USERF(75),,DEA4;	
2247	;	
2248	DEA4 FREE,DEARM/1,1;	FREE DEARM CREW
2249	ACT,,,DEA5;	
2250	;	
2251	DEA5 ASSIGN,ATRI(8)=TNOW-ATRI(8),	
2252	ATRI(7)=ATRI(7)+ATRI(8),	
2253	ATRI(18)=USERF(51),	
2254	ATRI(14)=ATRI(14)+ATRI(8),	
2255	XX(95)=USERF(124),	
2256	ATRI(8)=TNOW,ATRI(13)=10,2;	
2257	ACT,,USERF(37).GE.2.AND.	
2258	USERF(12).EQ.1.OR.	
2259	ATRI(16).GE.2.AND.	
2260	USERF(12).EQ.1,DEA7;	A/C BROKE/DAMAGED, NEEDS TOW
2261	ACT,,USERF(37).GE.2.AND.	
2262	USERF(12).EQ.0.OR.	
2263	ATRI(16).GE.2.AND.	
2264	USERF(12).EQ.0,MAIN;	A/C BROKE/DAMAGED, CAN TAXI
2265	ACT,USERF(67),	
2266	USERF(37).GE.2.AND.	
2267	USERF(12).EQ.1.OR.	
2268	ATRI(16).GE.2.AND.	
2269	USERF(12).EQ.1,PSEP;	FREE PILOT FROM TOWED A/C
2270	ACT,,USERF(37).LT.2.AND.	
2271	ATRI(16).LT.2,DEA6;	A/C NORMAL TAXI
2272	;	
2273	DEA7 ASSIGN,ATRI(32)=0,1;	NO PILOT IN TOWED A/C
2274	ACT,,,MAIN;	
2275	;	
2276	DEA6 ASSIGN,ATRI(3)=USERF(21),1;	GET SQ PARKING SPOT
2277	ACT,USERF(64),	
2278	USERF(77).EQ.1,HOT;	NON-SHELTERED A/C FROM A SQ
2279	;	CONVENIENTLY LOCATED TAXI TO HOT
2280	;	
2281	ACT,USERF(61),,SQPA;	SQ NOT CONVENIENT TO HOTPIT
2282	;	PROCEED TO SQ PARKING
2283	;	



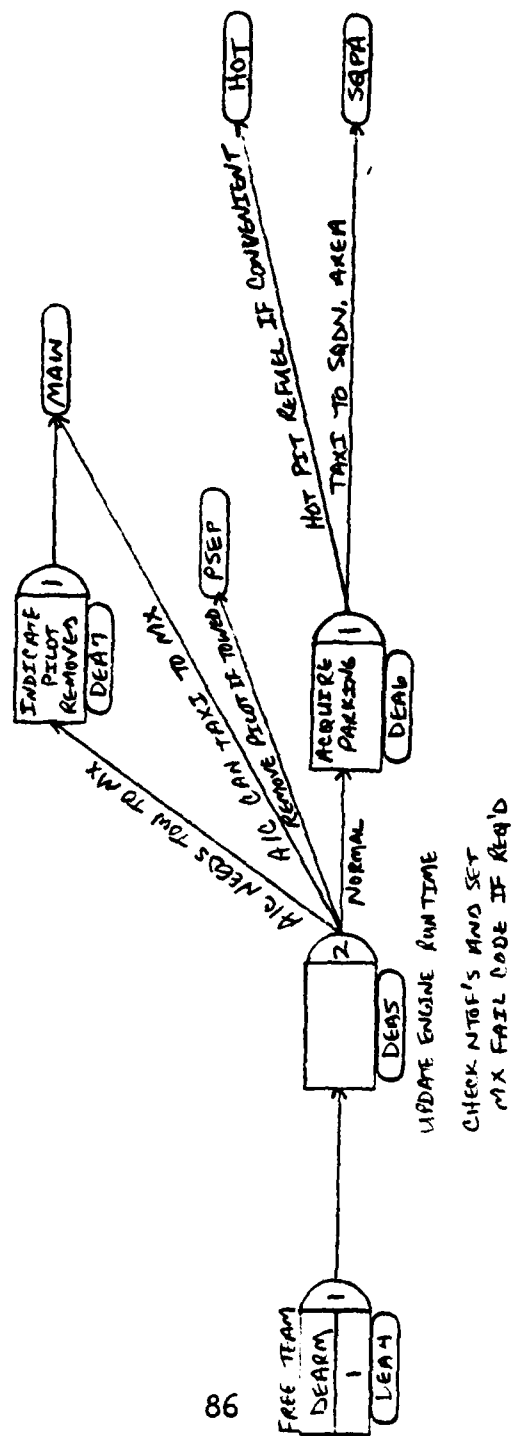


Fig A.14.2 Landing, Rollout, Taxi to Dearn, Dearn

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2284      ; HOTPIT REFUELING
2285      ;   THOSE A/C WHOSE SQUADRON AREA IS CONVENIENTLY LOCATED ON THE
2286      ; TAXI ROUTE OF A/C RETURNING TO THEIR AREAS REFUEL AT HOTPIT IF
2287      ; FUEL IS AVAILABLE AND A HOTPIT IS AVAILABLE. IF THE A/C BREAKS
2288      ; TAXIING TO OR DURING HOTPIT REFUELING, THE A/C WILL TAXI OR BE
2289      ; TOWED TO MAINTENANCE. IF IT IS TOWED THE PILOT IS TAKEN OUT
2290      ; OF THE A/C AND ROUTED TO HIS SQUADRON AREA. A/C PROCEED TO
2291      ; THEIR SQUADRON AREA AFTER COMPLETING HOTPIT REFUELING.
2292      ;
2293      HOT ASSIGN, ATRIB(8)=TNOW-ATRI(8),
2294      ATRIB(7)=ATRI(7)+ATRI(8),
2295      ATRIB(14)=ATRI(14)+ATRI(8),
2296      ATRIB(18)=USERF(51),
2297      XX(95)=USERF(124),
2298      ATRIB(8)=TNOW, ATRIB(13)=11,2;UPDATE TIME
2299      ACT, USERF(61), USERF(37).LT.2.AND.
2300      NNQ(50).GT.0.OR.
2301      USERF(37).LT.2.AND.
2302      XX(60).LE.0.SQPA;      BALK FROM HOTPIT, A/C IN LINE
2303      ACT, USERF(37).GE.2.AND.
2304      USERF(12).EQ.0, HOT6;      MX PROB, NO HOT PIT, TAXI OK
2305      ACT, USERF(37).GE.2.AND.
2306      USERF(12).EQ.1, HOT5;      A/C BROKE - NEEDS TOW
2307      ACT, USERF(67),
2308      USERF(37).GE.2.AND.
2309      USERF(12).EQ.1, PSEP;      FREE PILOT FROM TOWED A/C
2310      ACT, USERF(37).LT.2.AND.
2311      NNQ(50).EQ.0.AND.
2312      XX(60).GT.0, HOTP;      GO TO HOTPIT REFUEL
2313      ;
2314      HOTP AWAIT(50), HOTPIT/1,1;      AWAIT A FREE PIT
2315      ACT,,,HOT1;
2316      ;
2317      HOT1 ASSIGN, ATRIB(15)=USERF(71),
2318      XX(60)=XX(60)-ATRI(15),1;      SET FUEL REQUIRED
2319      ACT/4, USERF(78),,HOT3;      HYDRANT REFUELING SERVICE
2320      ;
2321      HOT3 FREE, HOTPIT/1,1;      FREE PIT FOR NEXT A/C
2322      ACT,,,HOT4;
2323      ;
2324      HOT4 ASSIGN, ATRIB(8)=TNOW-ATRI(8),
2325      ATRIB(7)=ATRI(7)+ATRI(8),
2326      ATRIB(18)=USERF(51),
2327      ATRIB(8)=TNOW, ATRIB(14)=0,
2328      XX(95)=USERF(124),
2329      ATRIB(15)=0,1;      CHK FOR FAILURE, RESET TIME, FUEL
2330      ACT, USERF(67),
2331      USERF(37).GE.2.AND.
2332      USERF(12).EQ.1, PSEP;      FREE PILOT FROM TOWED A/C
2333      ACT, USERF(37).GE.2.AND.

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2334	USERF(12).EQ.1,HOT5;	A/C BROKE - NEEDS TOW
2335	ACT,,USERF(37).GE.2.AND.	
2336	USERF(12).EQ.0,HOT6;	A/C BROKE BUT OK TO TAXI
2337	ACT,USERF(61),,SQPA;	A/C TO SQ PARKING
2338	;	
2339	HOT5 ASSIGN,TRIB(32)=0,1;	NO PILOT IN TOWED A/C
2340	ACT,,HOT6;	
2341	;	
2342	HOT6 ASSIGN,TRIB(3)=USERF(22),1;	GIVE UP SQ PARKING, GO TO MAIN
2343	ACT,,MAIN;	
2344	;	

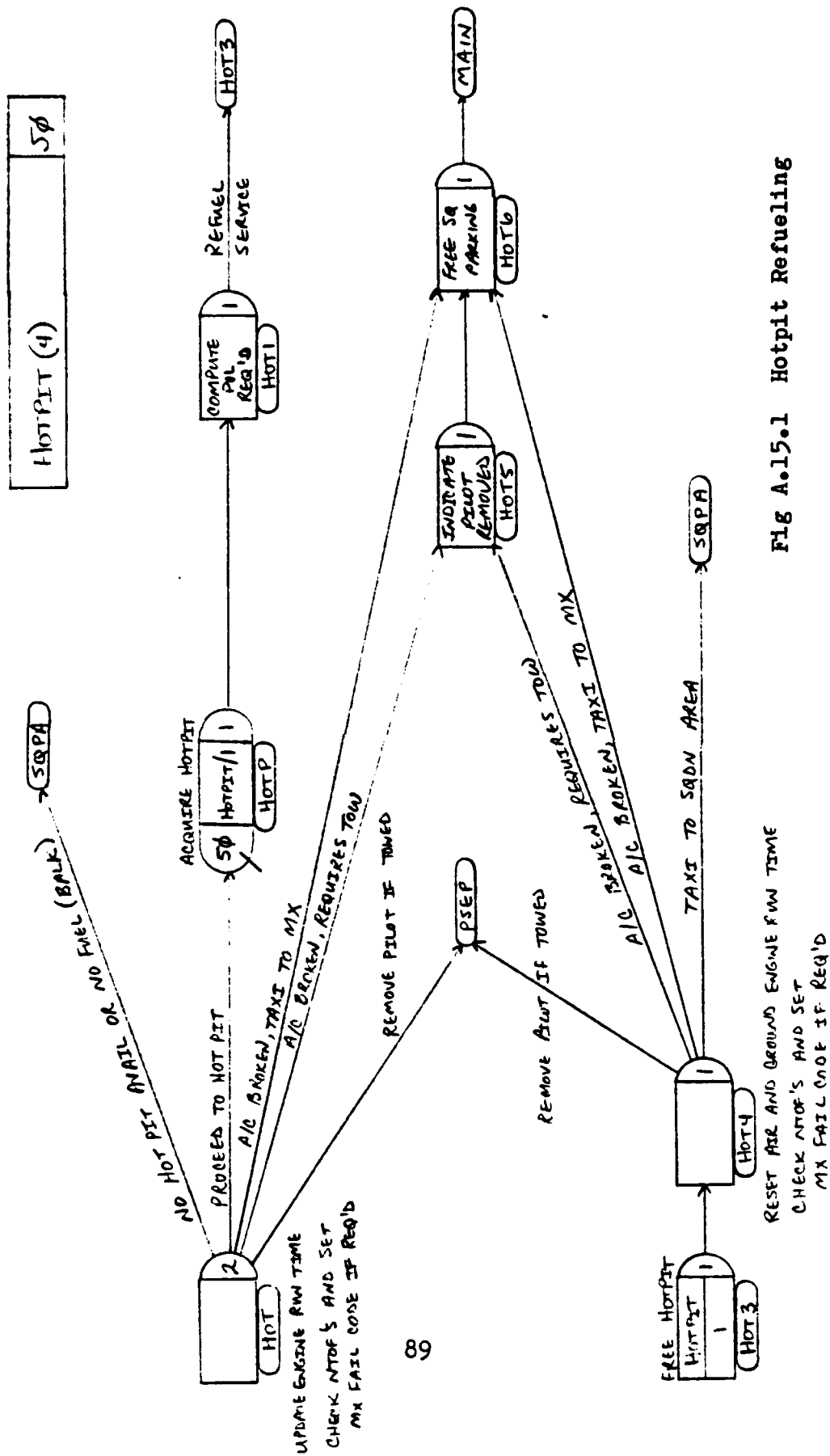


Fig A.15.1 Hotpit Refueling

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2345      ; ENGINE SHUT DOWN
2346      ; WHEN AN A/C REACHES ITS SQUADRON AREA IT IS PARKED IN ITS
2347      ; ASSIGNED SPACE AND THE ENGINE IS SHUT DOWN. THE PILOT LEAVES THE
2348      ; A/C (PSEP). IF THE A/C EXPERIENCED A FAILURE ENROUTE TO THE
2349      ; SQUADRON AREA IT IS SCHEDULED FOR MAINTENANCE (SQ LEVEL
2350      ; OR MMT). A/C THAT ARE TURNABLE ACQUIRE A CREW CHIEF AND BEGIN
2351      ; TURNAROUND SERVICING. THE A/C STAYS IN THE SQUADRON AREA FOR
2352      ; MAINTENANCE.
2353      ; AFTER ACQUIRING A CREW CHIEF A DETERMINATION IS MADE WHETHER THE
2354      ; A/C REQUIRES RECONFIGURATION. IF IT DOES, THE A/C IS RECON-
2355      ; FIGURED AND PROCEEDS TO TURNAROUND PROCESSING IN THE PARALLEL
2356      ; SERVICE OPERATION (PSO). IF NO RECONFIGURATION IS REQUIRED
2357      ; THE A/C PROCEEDS DIRECTLY TO PSO.
2358      ;
2359      SQFA ASSIGN, ATRIB(8)=TNOW-ATRIB(8),
2360      ATRIB(7)=ATRIB(7)+ATRIB(8),
2361      ATRIB(14)=ATRIB(14)+ATRIB(8),
2362      XX(95)=USERF(124),
2363      ATRIB(18)=USERF(51), 2;
2364      ACT,,PSEP;          SEPARATE PILOT AT ENG. SHUTDOWN
2365      ACT,,USERF(37).GE.2,SPMX;    TO SQ MAINT -SEE IF MMT REQ'D
2366      ACT,,MXTM;          AWAIT CREW CHIEF ASSIGNMENT
2367      ;
2368      PSEP ASSIGN, ATRIB(8)=ATRIB(38),
2369      ATRIB(9)=ATRIB(39), ATRIB(10)=ATRIB(40),
2370      ATRIB(11)=ATRIB(41), 1;
2371      ;
2372      PSE1 ASSIGN, ATRIB(1)=ATRIB(31),
2373      ATRIB(2)=ATRIB(32), ATRIB(3)=ATRIB(33),
2374      ATRIB(4)=ATRIB(34), ATRIB(5)=ATRIB(35),
2375      ATRIB(6)=ATRIB(36), ATRIB(7)=ATRIB(37),
2376      ATRIB(12)=ATRIB(42),
2377      XX(95)=USERF(123), 1;    RECREATE PILOT
2378      ACT,,ATRIB(32).EQ.0,PSE2;    NO PILOT WAS IN THE A/C
2379      ACT,10,ATRIB(1).EQ.1,PL1;    SMOKE & A COKE, BACK TO SQ RDYPOOL
2380      ACT,10,ATRIB(1).EQ.2,PL2;
2381      ACT,10,ATRIB(1).EQ.3,PL3;
2382      ACT,10,ATRIB(1).EQ.4,PL4;
2383      ACT,10,ATRIB(1).EQ.5,PL5;
2384      ACT,10,ATRIB(1).EQ.6,PL6;
2385      ;
2386      PSE2 TERMINATE;
2387      ;
2388      ;
2389      MXTM AWAIT(51), MXTEAM/1, 1;    AWAIT CREW CHIEF
2390      ACT,,ATRIB(17).EQ.1,PSO;    A/C WAS SYM GRND ABORT, TO PSO
2391      ACT, TRIAG(3,4,5), MXT1;    MX POST-FLIGHT ACTIVITY
2392      ;
2393      MXT1 ASSIGN, ATRIB(8)=USERF(73),
2394      XX(95)=USERF(125),

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2395	ATRIB(15)=USERF(71),1;	DETERMINE CONFIGURATION REQ'D
2396	ACT,TRIAC(3,4,5),	
2397	ATRIB(8).EQ.ATRIB(12),PSO;	NO RECONFIG REQ'D.
2398	ACT,TRIAC(3,4,5),,RECO;	MX POST-FLIGHT ACTIVITY
2399	;	
2400	RECO ASSIGN,ATRIB(15)=USERF(72),	
2401	ATRIB(12)=ATRIB(8),1;	RECALC FUEL REQ'D, CONFIG SET
2402	ACT/1,USERF(76),,PSO;	RECONFIG SERVICE
2403	;	

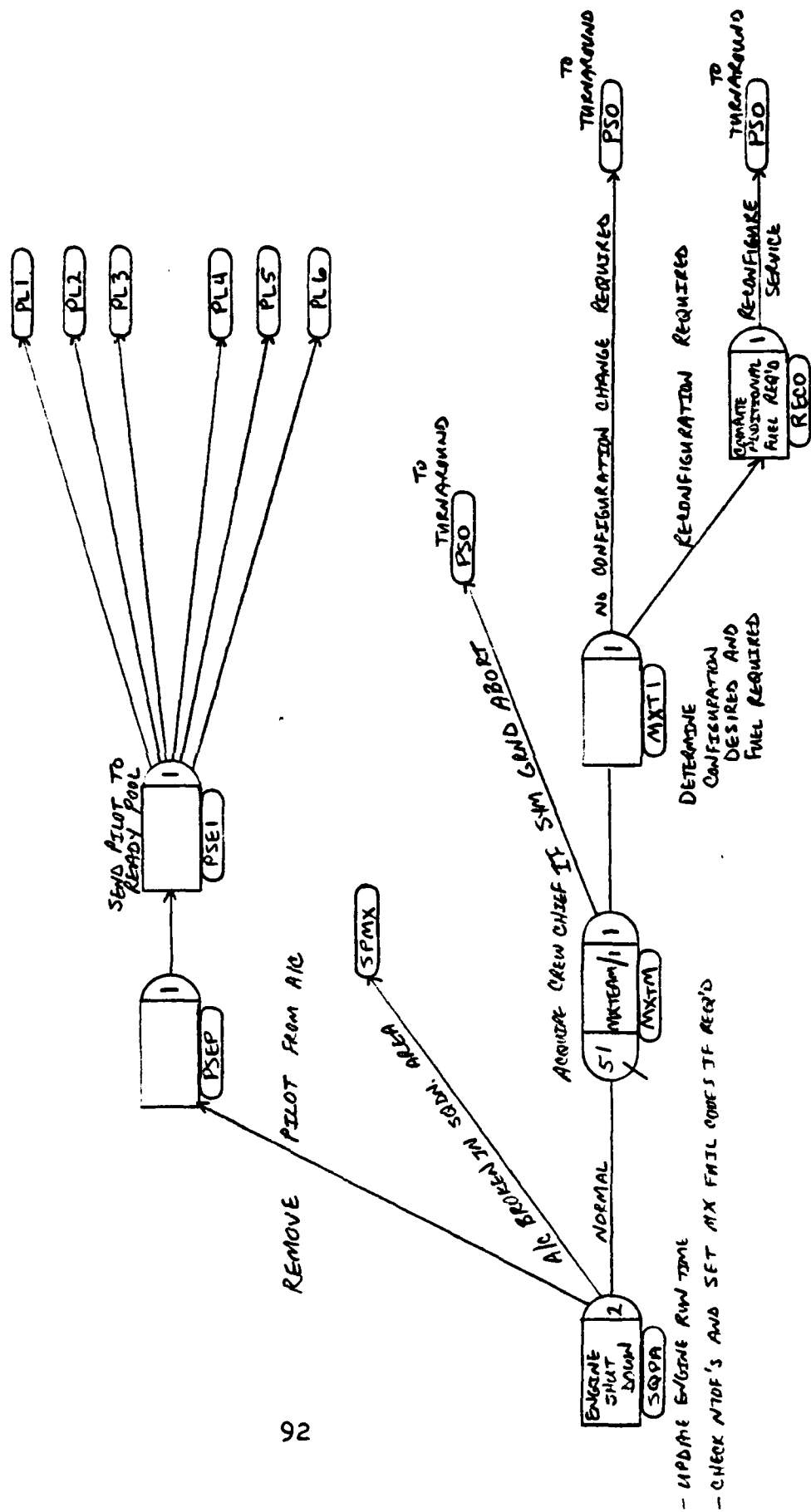


Fig A.16.1 Engine Shut Down

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2404      ; TURNAROUND SERVICE OPERATION
2405      ; THE TURNAROUND SERVICE OPERATION IS A PARALLEL SERVICE OPERA-
2406      ; TION IN WHICH THE SERVICES ARE PERFORMED CONCURRENTLY. THE
2407      ; SERVICES ARE REARMING, MAINTENANCE POST-FLIGHT AND REFUELING,
2408      ; IF REQUIRED. THE A/C ACQUIRES A REARMING TEAM, RECEIVES ITS
2409      ; ORDNANCE AND THEN FREES THE TEAM. IF THE AIRCRAFT WAS A SYMPA-
2410      ; THETIC ABORT AND ALREADY HAS ORDNANCE A PATH IS AVAILABLE
2411      ; AROUND REARMING. AT THE SAME TIME THE CREW CHIEF PERFORMS THE
2412      ; MAINTENANCE POST-FLIGHT, THE AIRCRAFT IS REFUELED, IF REQUIRED.
2413      ; IF THE A/C IS PARKED IN A SHELTER IT IS REFUELED THERE. IF THE
2414      ; AIRCRAFT IS NOT SHELTERED IT REQUIRES A FUEL TRUCK. IF NO FUEL
2415      ; IS AVAILABLE AND THE A/C REQUIRES FUEL, IT WAITS FOR REFUELING
2416      ; IN THE PARKING SPACE. WHEN ALL THREE SERVICES ARE COMPLETED
2417      ; THE CREW CHIEF IS RELEASED AND THE AIRCRAFT IS REASSEMBLED AT
2418      ; THE MATCH NODE AND IT IS READY TO GO THROUGH THE STATISTICAL
2419      ; ROUTINE TO THE AIRCRAFT READY POOL FOR ITS SQUADRON.
2420      ;
2421      PS0 COON,3;                                TURNAROUND SERVICING ROUTINE
2422      ACT,,ATRI(9).NE.1.OR.
2423      ATRI(10).NE.1,REAR;                        TO REARM, IF REQ'D
2424      ACT,,ATRI(9).EQ.1.AND.
2425      ATRI(10).EQ.1,REA2;                        IF ARMED, BRANCH AROUND REARM SERVICE
2426      ACT/3,TRIAC(4,5,6),MXPF;                  MX POST-FLIGHT
2427      ACT,,ATRI(15).EQ.0,REF3;                  A/C NOT PIT REFUELED, SKIP REFUE
2428      ACT,,ATRI(15).NE.0.AND.
2429      XX(60).GT.0,REF;                            A/C NEEDS GAS AND GAS AVAILABLE
2430      ACT,,ATRI(15).NE.0.AND.
2431      XX(60).LE.0,REF7;                          NEEDS GAS, NONE AVAIL, CLOSE GATE
2432      ;
2433      REAR WAIT(52),REAR/1,1;                    WAIT FOR REARM CREW
2434      ACT/2,USERF(76)+3,REA1;                    REARM SERVICE
2435      ;
2436      REA1 FREE,REAR/1,1;                        RELEASE ARMING CREW
2437      ACT,,REA2;
2438      ;
2439      REA2 QUEUE(55),,,,PSMA;                    Q BEFORE MATCH, END CONCURRENT
2440      ;                                           TURNAROUND SERVICE
2441      ;
2442      MXPF QUEUE(56),,,,PSMA;                    Q BEFORE MATCH
2443      ;
2444      GREF COON,1;
2445      ACT,,ATRI(3).EQ.1,REF1;                    REFUEL IN A SHELTER
2446      ACT,,REFU;                                REFUELED BY A TRUCK
2447      ;
2448      REF1 ASSIGN,XX(60)=XX(60)-ATRI(15),1;REDUCE POL BY AMOUNT USED
2449      ACT/5,USERF(78),REF2;                      SHELTER REFUEL SERVICE
2450      ;
2451      REF2 ASSIGN,ATRI(14)=0,ATRI(15)=0,1;RESET TIME KEEPERS
2452      ACT,,REF3;
2453      ;

```

2454	REF3 QUEUE(57),,,PSMA;	Q BEFORE MATCH
2455	;	
2456	REFU AWAIT(53),REFUEL/1,1;	WAIT FOR FUEL TRUCK
2457	;	
2458	REF4 ASSIGN,XX(60)=XX(60)-ATTRIB(15),1;REDUCE POL BY AMOUNT REQ'D	
2459	ACT/6,TRIAG(5,8,12)+3,,REF5;	TRUCK REFUELING SERVICE
2460	;	
2461	REF5 FREE,REFUEL/1,1;	RELEASE FUEL TRUCK
2462	ACT,,,REF2;	
2463	;	
2464	REF7 CLOSE,FUELAVAL,1;	NO FUEL AVAILABLE, CLOSE GATE
2465	ACT,,,REF8;	
2466	;	
2467	REF8 AWAIT(54),FUELAVAL,1;	WAIT FOR FUEL
2468	ACT,,,GREF;	
2469	;	
2470	PSMA MATCH,2,REA2/TERM,	
2471	MXPF/TERM,REF3/PSOC;	A/C DONE WITH CONCURRENT SERVICE
2472	;	
2473	;	
2474	PSOC FREE,MXTEAM/1,1;	RELEASE CREW CHIEF
2475	ACT,,ATTRIB(27).NE.0,CL09;	
2476	ACT,,ATTRIB(26).NE.0,CL08;	
2477	ACT,,,CL07;	
2478	;	
2479	CL09 COLCT,INTVL(27),TURNSEVDAY03,,1;	
2480	ACT,,,PSOX;	
2481	;	
2482	CL08 COLCT,INTVL(26),TURNSEVDAY02,,1;	
2483	ACT,,,PSOX;	
2484	;	
2485	CL07 COLCT,INTVL(25),TURNSEVDAY01,,1;	
2486	ACT,,,PSOX;	
2487	;	
2488	PSOX ASSIGN,ATTRIB(17)=0,	
2489	ATTRIB(13)=ATTRIB(1),1;	RESET SYM CODE AND LOCATION CODE
2490	ACT,,USERF(17).EQ.1,ARP1;	A/C TO THEIR SQ A/C READYPool
2491	ACT,,USERF(17).EQ.2,ARP2;	
2492	ACT,,USERF(17).EQ.3,ARP3;	
2493	ACT,,USERF(17).EQ.4,ARP4;	
2494	ACT,,USERF(17).EQ.5,ARP5;	
2495	ACT,,USERF(17).EQ.6,ARP6;	
2496	;	

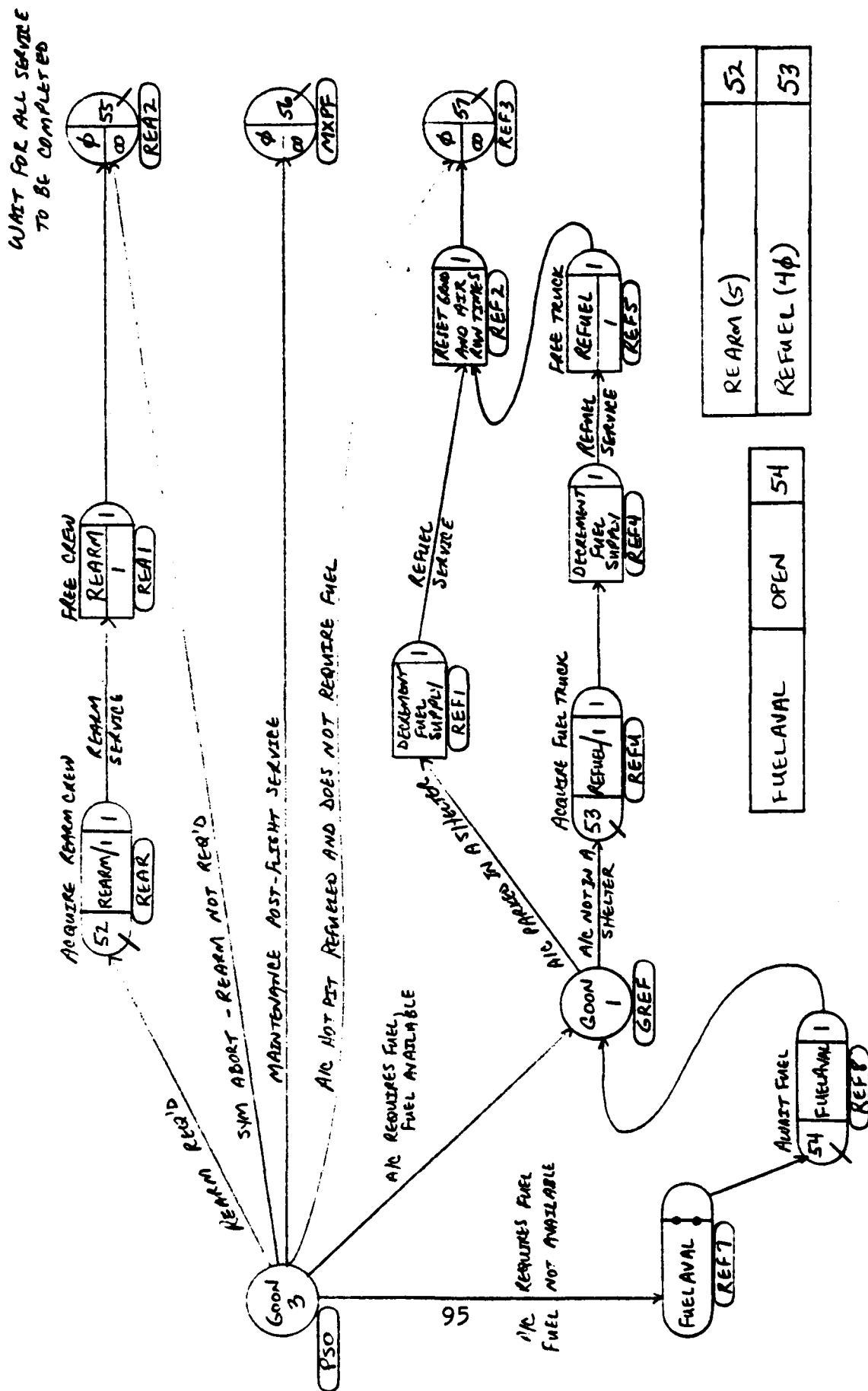


Fig A.17.1 Turnaround Service Operation

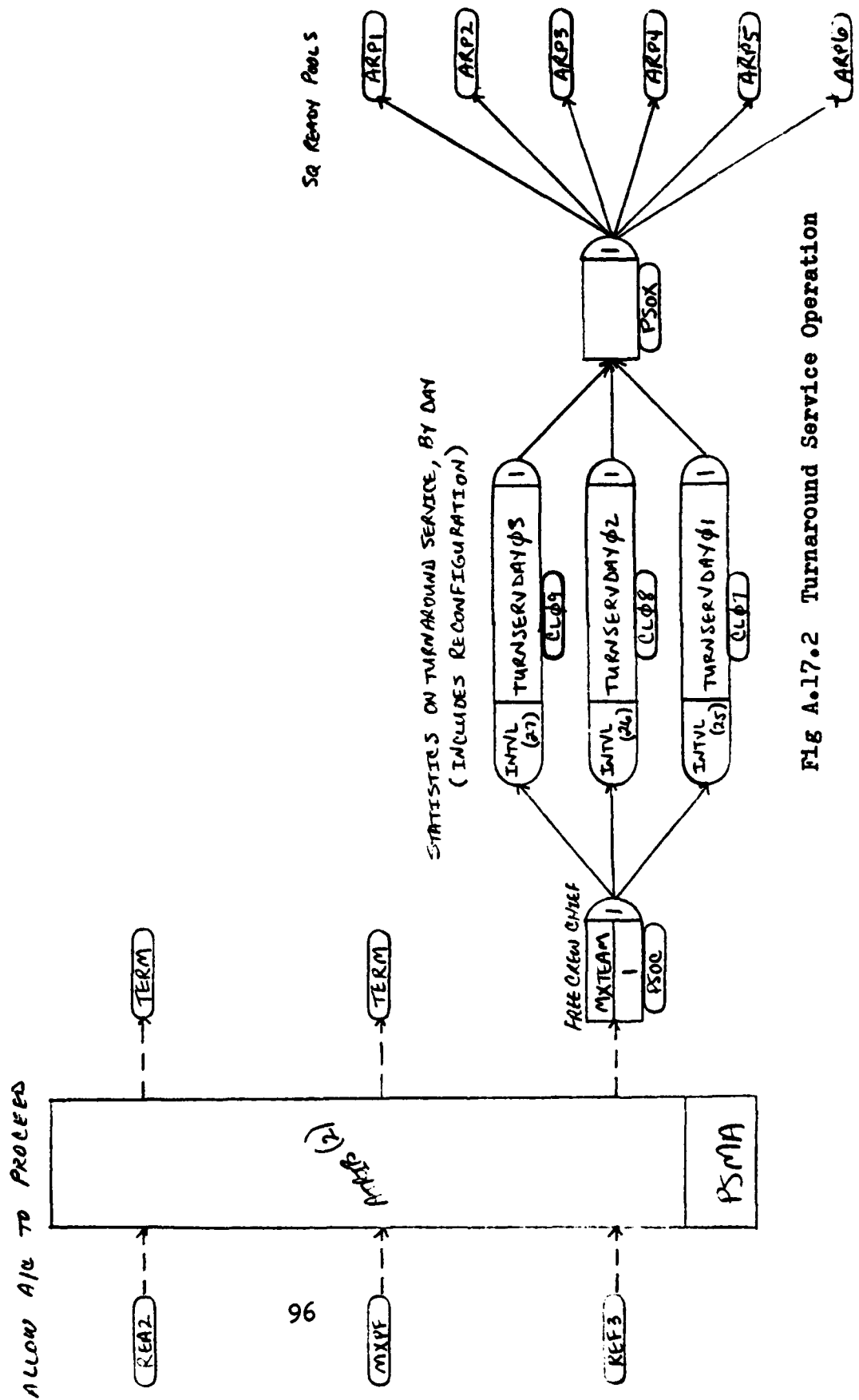


Fig A.17.2 Turnaround Service Operation

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2497      ; MAINTENANCE CONTROL
2498      ; A/C WHICH REQUIRE MAINTENANCE ARE INITIALLY DIVIDED INTO 3
2499      ; GROUPS- THOSE WITH FAILURE LEVELS LESS THAN 4 (MINOR), THOSE
2500      ; WITH FAILURE LEVELS EQUAL TO OR GREATER THAN 4 (MAJOR), AND
2501      ; THOSE WITH BATTLE DAMAGE. A/C WITH MINOR PROBLEMS ARE SENT
2502      ; TO SQUADRON LEVEL MAINTENANCE FOR SERVICE. A/C WITH BATTLE
2503      ; DAMAGE ARE EITHER SCRAPPED (USE FOR KBALL OR SEND TO DEPOT)
2504      ; OR THEY ARE GIVEN COMMENSURATE MAINTENANCE FAILURE CODES AND
2505      ; ROUTED ON TO MAINTENANCE CONTROL (MCON). A/C WITH MAJOR
2506      ; PROBLEMS GO TO MCON.
2507      ; AT MCON THE DECISION IS MADE ON WHERE TO REPAIR THE A/C WITH
2508      ; MAJOR MAINTENANCE PROBLEMS. THE DECISION IS BASED ON THE
2509      ; FOLLOWING RULES-
2510      ;
2511      ;
2512      ; 1 - REPAIR AT WING IF A REQUIRED SHOP IS FREE.
2513      ;
2514      ; 2 - REPAIR WITH MMT IF A REQUIRED MMT IS FREE.
2515      ;
2516      ; 3 - WAIT FOR REPAIR AT WING IF WAITING SPACE IS FREE.
2517      ;
2518      ; 4 - GO TO SQUADRON MAINTENANCE AND REPAIR MINOR PROBLEMS,
2519      ; THEN WAIT FOR MMT.
2520      ;
2521      ; AS IT IS THROUGHOUT THE MODEL, AN A/C CAN EITHER TAXI OR BE
2522      ; TOWED TO THE CORRECT FACILITY.
2523      ;
2524      MAIN ASSIGN,XX(95)=USERF(125),1;      MAINTENANCE CONTROL ROUTINE
2525      ACT,,USERF(37).LT.4.AND.
2526      ATRIB(16).EQ.0,SP;      TO SQ (NO BATTLE DAMAGE)
2527      ACT,,ATRI(16).EQ.0.AND.
2528      USERF(37).GE.4,MCON;      TO MX CONTROL SORTING
2529      ACT,TRIAG(10,15,30),
2530      ATRIB(16).NE.0,BADA;      TO BATTLE DAMAGE ASSESSMENT
2531      ;
2532      SP ASSIGN,ATRI(3)=USERF(21),1;      GET A PARKING SPACE
2533      ACT,USERF(65),
2534      ATRIB(32).EQ.0,SPMX;      GET A CREW CHIEF
2535      ACT,USERF(61),,SPT1;      GO TO ENGINE SHUT DOWN FOR SQ MX
2536      ;
2537      SPT1 ASSIGN,ATRI(8)=TNOW-ATRI(8),
2538      ATRIB(7)=ATRI(7)+ATRI(8),
2539      ATRIB(14)=ATRI(14)+ATRI(8),
2540      XX(95)=USERF(124),
2541      ATRIB(18)=USERF(51),2;      RESET CODES,ENGINE SHUT DOWN, SQ MX
2542      ACT,,PSEP;      SEPARATE PILOT FROM A/C
2543      ACT,,SPMX;      GET A CREW CHIEF
2544      ;
2545      SPMX AWAIT(90),MXTEAM/1,1;      WAIT FOR A CREW CHIEF
2546      ACT,,SMXC;

```

2547	;	
2548	SMXC COON,1;	BRANCH TO MMT OR LESSER REPAIRS
2549	;	IF NO MMT IS AVAILABLE (IF REQ)
2550	;	
2551	ACT,,USERF(112).EQ.1,DLMT;	GO TO MMT ROUTINE IF REQ'D
2552	ACT,,,SMB;	SQMX, MMT NOT REQ'D OR UNAVAIL
2553	;	
2554	DLMT COON,1;	
2555	ACT/50,TRIAG(12,15,24),	
2556	ATRIB(10).EQ.1,MMT;	DOWNLOAD ORDNANCE
2557	ACT,,,MMT;	
2558	;	
2559	SMB ASSIGN,ATRIB(17)=USERF(39),1;	ROUTE TO APPROPRIATE SQ MX AREA
2560	ACT,,ATRIB(1).EQ.1,SM1;	A/C TO IT'S SQ MX AREA
2561	ACT,,ATRIB(1).EQ.2,SM2;	
2562	ACT,,ATRIB(1).EQ.3,SM3;	
2563	ACT,,ATRIB(1).EQ.4,SM4;	
2564	ACT,,ATRIB(1).EQ.5,SM5;	
2565	ACT,,ATRIB(1).EQ.6,SM6;	
2566	;	
2567	MCON COON,1;	ROUTE TO APPROPRIATE MX AREA
2568	ACT,,USERF(111).EQ.1,MCW1;	TO WING MX IF AVAILABLE
2569	;	
2570	ACT,,USERF(112).EQ.1,SP;	IF NO WING, TO MMT IF AVAILABLE
2571	ACT,,NNQ(62).LT.2,MCW1;	NO WING OR MMT SO WING Q IF OPEN
2572	ACT,,,SP;	IF ALL ELSE FAILS, TO SQ FOR MMT
2573	;	
2574	MCW1 ASSIGN,ATRIB(3)=4,1;	PARKED AT WING MX
2575	ACT,USERF(66),	
2576	ATRIB(32).EQ.0,DLWC;	ADD TOW TIME
2577	ACT,USERF(62),,MCW2;	ADD TAXI TIME
2578	;	
2579	MCW2 ASSIGN,ATRIB(8)=TNOW-ATRIB(8),	
2580	ATRIB(7)=ATRIB(7)+ATRIB(8),	
2581	ATRIB(14)=ATRIB(14)+ATRIB(8),	
2582	XX(95)=USERF(124),	
2583	ATRIB(18)=USERF(51),2;	RESET CODES
2584	ACT,,,DLWC;	A/C INTO WING MX
2585	ACT,,,PSEP;	SEPARATE PILOT FROM A/C
2586	;	
2587	DLWC COON,1;	
2588	ACT/49,TRIAG(12,15,24),	
2589	ATRIB(10).EQ.1,WC;	DOWNLOAD ORDNANCE
2590	ACT,,,WC;	PROCEED DIRECT TO WC MX
2591	;	
2592	BADA ASSIGN,ATRIB(18)=USERF(53),	
2593	XX(95)=USERF(124),2;	CHANGE MX FAIL CODE AS A FUNCTION
2594	;	OF BATTLE DAMAGE
2595	ACT,,USERF(37).GE.4,AND.	
2596	ATRIB(18).NE.999999,MCON;A/C IS REPAIRABLE	

```

2597      ;
2598      ACT,,USERF(37).LT.4.AND.
2599      ATRIB(18).NE.999999,SP; TO SQ MX
2600      ACT,,ATRIB(18).EQ.999999.AND.
2601      ATRIB(32).NE.0,PSEP; SEPARATE PILOT BEFORE JUNKING A/C
2602      ACT,,ATRIB(18).EQ.999999,SRAP;TO FILE FOR DAILY CLEAN UP
2603      ; (ATTRITED,CRASHED, OR NON-
2604      ; REPAIRABLE)
2605      ;
2606      SRAP ASSIGN,ATRIB(32)=0,1; REMOVE PILOT
2607      ACT,,CRSH;
2608      ;

```

LINKS MAINTENANCE

WGSHOP 1 (2)	58
WGSHOP 2 (2)	59
WGSHOP 3 (2)	60
WGSHOP 4 (2)	61

WGPOOL	OPEN	62
--------	------	----

RIGHT MAINTENANCE

MMT1 (2)	63
MMT2 (2)	64
MMT3 (2)	65
MMT4 (2)	66
MMT5 (2)	67
MMT6 (2)	68

MMT POOL	OPEN	69
----------	------	----

SQUADRON MAINTENANCE

SQ% MX 1 (4)	WW
SQ% MX 2 (4)	XX
SQ% MX 3 (4)	YY
SQ% MX 4 (4)	ZZ

% = 1 THROUGH 6

WW = (70, 74, 78, 82, 86, 90)

XX = (71, 75, 79, 83, 87, 91)

YY = (72, 76, 80, 84, 88, 92)

ZZ = (73, 77, 81, 85, 89, 93)

Fig A.18.1 Maintenance Resources and Gates

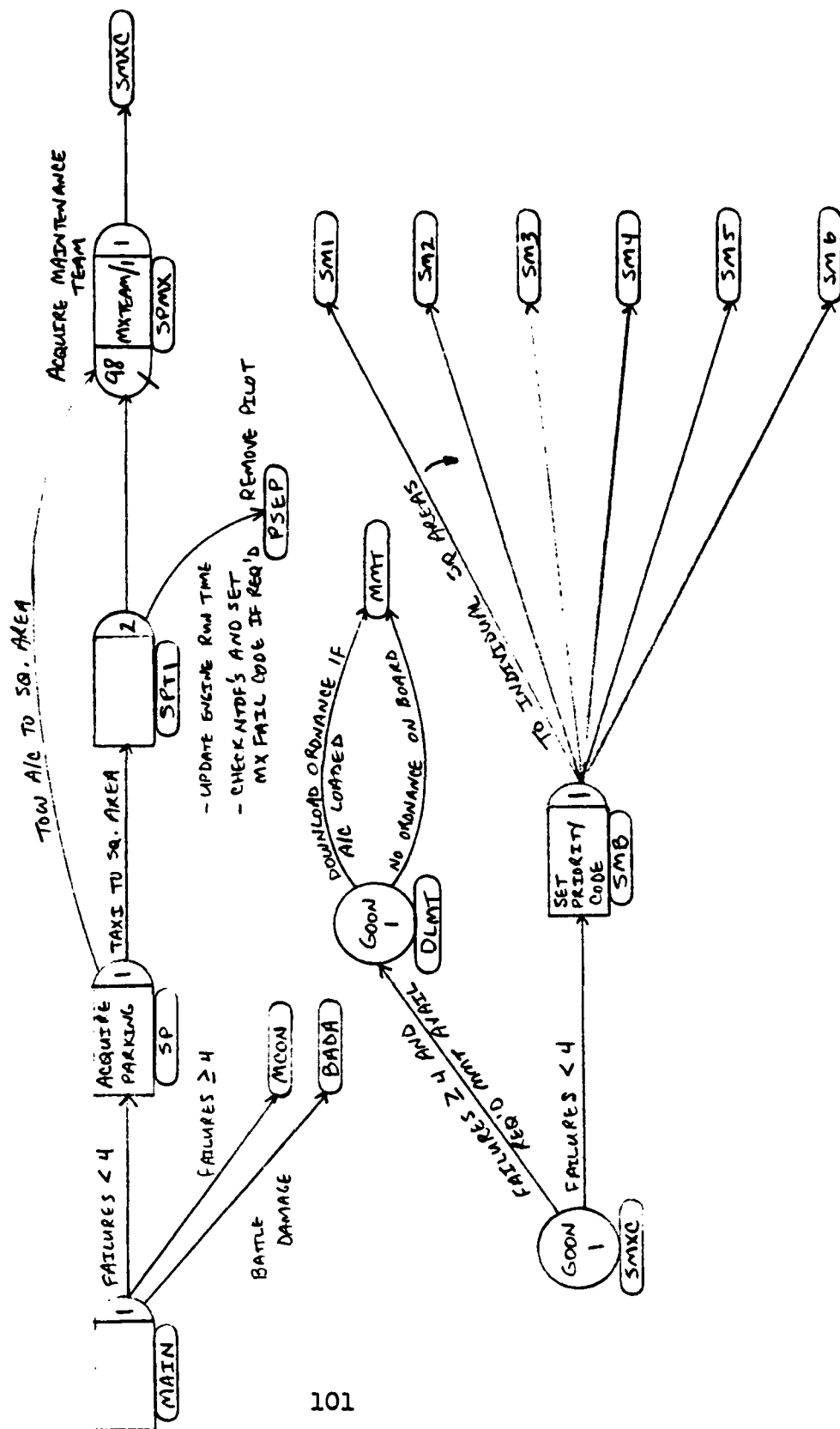


Fig A.18.2 Maintenance Control


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2609      ; WING MAINTENANCE
2610      ; AN A/C ARRIVING AT WING MAINTENANCE IS ASSIGNED A PRIORITY CODE
2611      ; BASED ON THE LEVEL AND NUMBER OF SYSTEMS REQUIRING REPAIR. ALL
2612      ; LEVEL FOUR AND FIVE SYSTEMS ARE ADDED TO YIELD A NUMBER. A/C
2613      ; ARE PROCESSED BASED ON LOW VALUE FIRST OF THE NUMBER. (FIX THE
2614      ; EASIEST ONES FIRST) IF A SHOP IS OPEN THE A/C IS PROCESSED,
2615      ; ELSE IT GOES TO THE WAITING POOL. WHEN AN A/C COMPLETES SERVICE
2616      ; IT FREES THE WING SHOP, RESETS ITS FAILURE CODE AND NTOF (FOR
2617      ; THE SYSTEMS REPAIRED) AND SIGNALS THE A/C WAITING IN THE WAITING
2618      ; POOL THAT A WING SHOP IS FREE. IF A/C WAITING FOR A WING SHOP
2619      ; CAN NOT USE THE WING SHOP WHICH WAS FREED, THE A/C WAITING IN
2620      ; THE MMT POOL ARE NOTIFIED. IF ANY OF THOSE A/C CAN USE THE OPEN
2621      ; WING SHOP, THE A/C IS TOWED TO WING. ALL A/C UNABLE TO USE THE
2622      ; WING SHOP FROM BOTH WING AND MMT WAITING POOLS ARE RETURNED TO
2623      ; THE APPROPRIATE WAITING POOL (THE ONE THEY CAME FROM).
2624      ; IF THE A/C WHICH FREED THE WING SHOP HAS BEEN COMPLETELY REPAIRED
2625      ; IT PROCEEDS TO TURNAROUND SERVICE. IF IT STILL HAS A MAJOR PROB-
2626      ; LEM, IT TRYs TO GET INTO THE REQUIRED WING SHOP OR WAITS IN THE
2627      ; WING WAITING POOL.
2628      ; IT IS ASSUMED THAT ALL MINOR PROBLEMS AN A/C MAY HAVE ARE REPAIRED
2629      ; WHILE THE A/C IS IN SERVICE AT WING. NO ADDITIONAL DELAY IS
2630      ; ADDED FOR THIS SERVICE, THE FAILURE CODES AND NTOFS ARE JUST RESET.
2631      ; THE WING SHOPS SERVICE THE FOLLOWING PROBLEMS-
2632      ;
2633      ;
2634      ; 1 - HYDRAULICS/PNEUMATICS AND AIRFRAME
2635      ;
2636      ; 2 - ENGINE/FUEL
2637      ;
2638      ; 3 - ELECTRICAL AND COMM/NAV/INSTRUMENTS/RADAR
2639      ;
2640      ; 4 - FIRE CONTROL/WEAPONS RELEASE
2641      ;
2642      WG ASSIGN,TRIB(10)=0,
2643          ATRIB(17)=USERF(38),1; WING MAINTENANCE ROUTINE
2644      ACT,,USERF(33).GE.4.AND.NNRSC(WGSHOP1).GT.0.OR.
2645          USERF(34).GE.4.AND.NNRSC(WGSHOP1).GT.0,
2646          WM11; HYDRAULICS OR AIRFRAME
2647      ACT,,USERF(32).GE.4.AND.NNRSC(WGSHOP2).GT.0,
2648          WM21; ENGINE/FUEL
2649      ACT,,USERF(31).GE.4.AND.NNRSC(WGSHOP3).GT.0.OR.
2650          USERF(35).GE.4.AND.NNRSC(WGSHOP3).GT.0,
2651          WM31; ELECTRICAL OR COMM/NAV/INST/RADAR
2652      ACT,,USERF(36).GE.4.AND.NNRSC(WGSHOP4).GT.0,
2653          WM41; FIRE CONTROL/WEAPONS RELEASE
2654      ACT,,WMP1; GATE TO INSURE TRAP IN Q WMP2
2655      ;
2656      WM11 AWAIT(58),WGSHOP1/1,1; AIRFRAME
2657          ACT/7,USERF(81),WM12;
2658      ;

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2659      WM12 FREE,WGSHOP1/1,1;
2660      ACT,,,WM13;
2661      ;
2662      WM13 ASSIGN,TRIB(21)=TRIB(7)+USERF(133),
2663      TRIB(18)=USERF(43),
2664      TRIB(22)=TRIB(7)+USERF(134),
2665      TRIB(18)=USERF(44),1;
2666      ACT,,,USERF(37).GE.4,WMD1;
2667      ACT,,,USERF(32).GE.2,WM23;
2668      ACT,,,USERF(31).GE.2,OR.
2669      USERF(35).GE.2,WM33;
2670      ACT,,,USERF(36).GE.2,WM43;
2671      ACT,,,WMD1;
2672      ;
2673      WM21 AWAIT(59),WGSHOP2/1,1;      ENGINES/FUEL
2674      ACT/8,USERF(82),,WM22;
2675      ;
2676      WM22 FREE,WGSHOP2/1,1;
2677      ACT,,,WM23;
2678      ;
2679      WM23 ASSIGN,TRIB(20)=TRIB(7)+USERF(132),
2680      TRIB(18)=USERF(42),1;
2681      ACT,,,USERF(37).GE.4,WMD1;
2682      ACT,,,USERF(33).GE.2,OR.
2683      USERF(34).GE.2,WM13;
2684      ACT,,,USERF(31).GE.2,OR.
2685      USERF(35).GE.2,WM33;
2686      ACT,,,USERF(36).GE.2,WM43;
2687      ACT,,,WMD1;
2688      ;
2689      WM31 AWAIT(60),WGSHOP3/1,1;      COMM/NAV/INST/RADIO/RADAR
2690      ACT/9,USERF(83),,WM32;
2691      ;
2692      WM32 FREE,WGSHOP3/1,1;
2693      ACT,,,WM33;
2694      ;
2695      WM33 ASSIGN,TRIB(19)=TRIB(7)+USERF(131),
2696      TRIB(18)=USERF(41),
2697      TRIB(23)=TRIB(7)+USERF(135),
2698      TRIB(18)=USERF(45),1;
2699      ACT,,,USERF(37).GE.4,WMD1;
2700      ACT,,,USERF(33).GE.2,OR.
2701      USERF(34).GE.2,WM13;
2702      ACT,,,USERF(32).GE.2,WM23;
2703      ACT,,,USERF(36).GE.2,WM43;
2704      ACT,,,WMD1;
2705      ;
2706      WM41 AWAIT(61),WGSHOP4/1,1;      FIRE CONTROL/WEAPONS RELEASE
2707      ACT/10,USERF(84),,WM42;
2708      ;

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2709      WM42 FREE,WGSHOP4/1,1;
2710      ACT,,,WM43;
2711      ;
2712      WM43 ASSIGN,ATRIB(24)=ATRIB(7)+USERF(136),
2713      ATRIB(18)=USERF(46),1;
2714      ACT,,,USERF(37).GE.4,WMD1;
2715      ACT,,,USERF(33).GE.2,OR.
2716      USERF(34).GE.2,WM13;
2717      ACT,,,USERF(32).GE.2,WM23;
2718      ACT,,,USERF(31).GE.2,OR.
2719      USERF(35).GE.2,WM33;
2720      ACT,,,WMD1;
2721      ;
2722      WMP1 CLOSE,WGPOOL,1;
2723      ACT,,,WMP2;
2724      ;
2725      WMP2 AWAIT(62),WGPOOL,1;
2726      ACT,,,WG;
2727      ;
2728      WMD1 OPEN,WGPOOL,1;
2729      ACT,.,0001,,WMD2;
2730      ;
2731      WMD2 OPEN,MMTPool,1;
2732      ACT,.,0001,USERF(37).GE.4,WG;
2733      ACT,.,0001,,WMD3;
2734      WMD3 ASSIGN,ATRIB(17)=0,ATRIB(18)=USERF(47),
2735      ATRIB(3)=USERF(21),
2736      ATRIB(13)=9,ATRIB(16)=0,1;
2737      ACT,USERF(65),ATRIB(27).NE.0,CL12;
2738      ACT,USERF(65),ATRIB(26).NE.0,CL11;
2739      ACT,USERF(65),,CL10;
2740      ;
2741      CL12 COLCT,INTVL(27),WGSERVCOMPDAY03,,1;
2742      ACT,,,MXTH;
2743      CL11 COLCT,INTVL(26),WGSERVCOMPDAY02,,1;
2744      ACT,,,MXTH;
2745      CL10 COLCT,INTVL(25),WGSERVCOMPDAY01,,1;
2746      ACT,,,MXTH;
2747      ;

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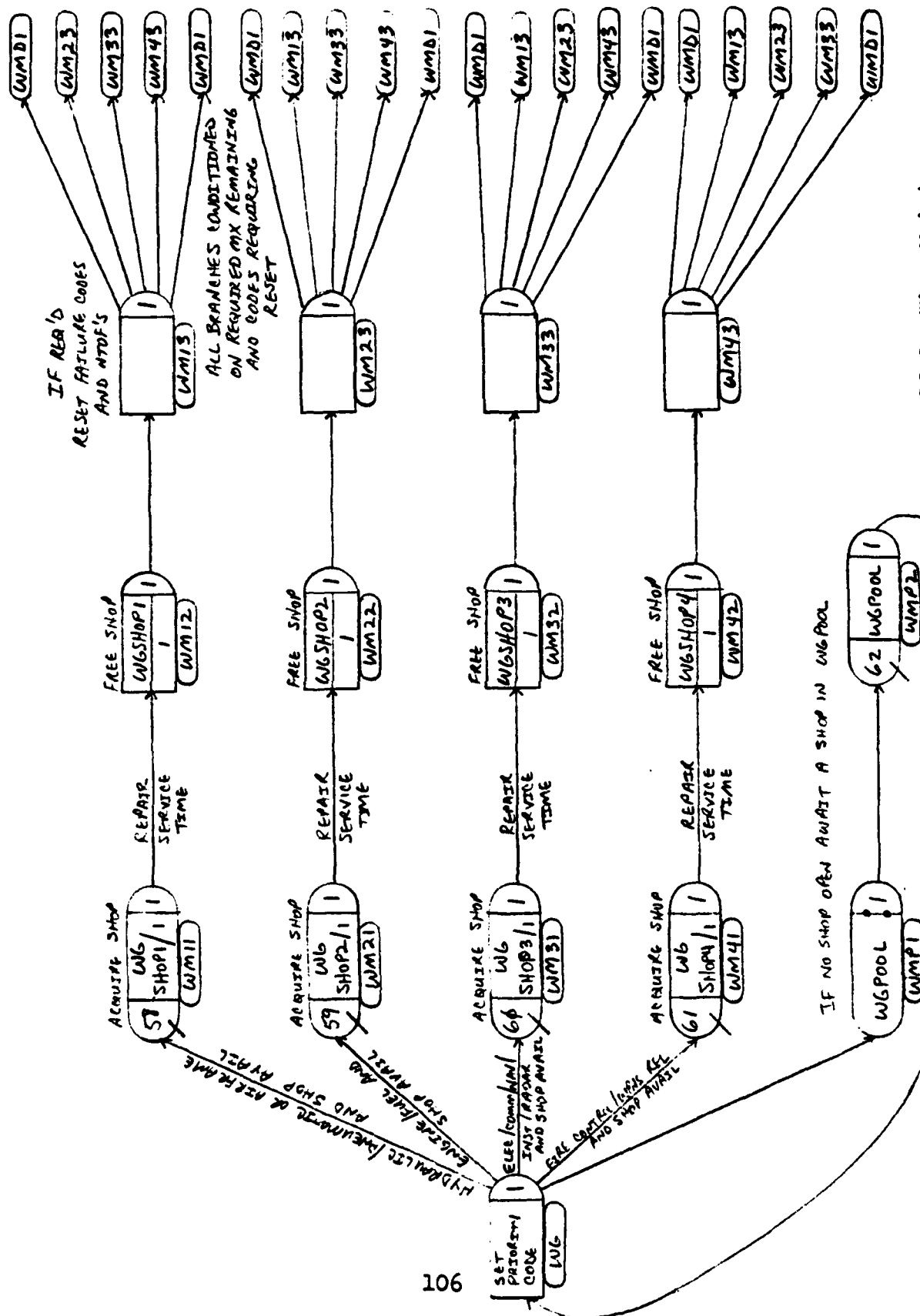
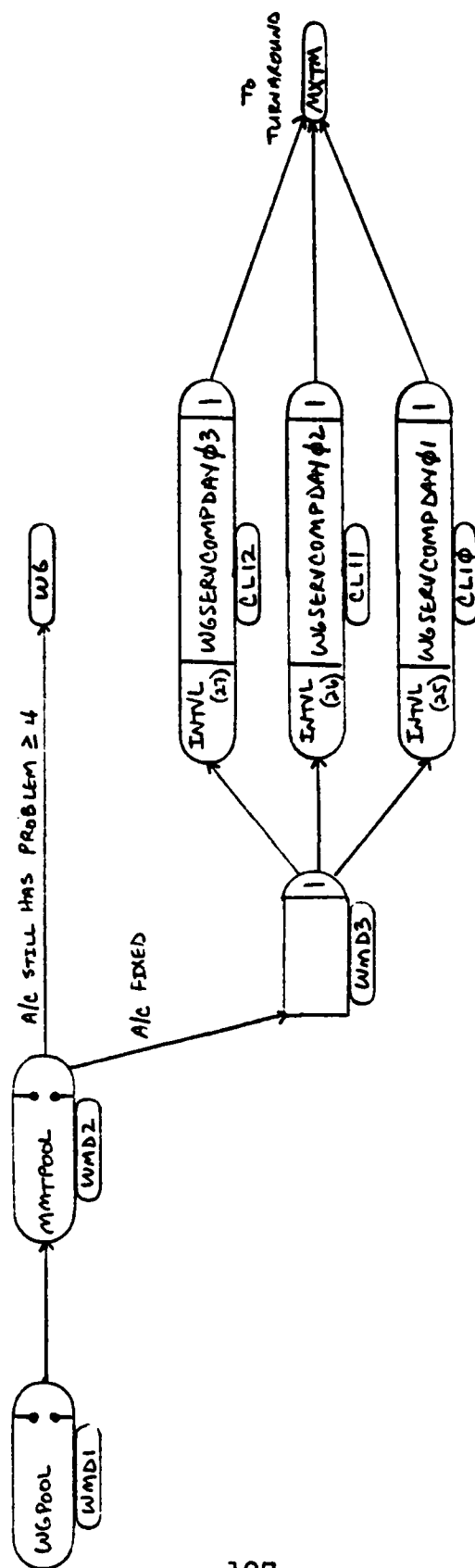


Fig A.19.1 Wing Maintenance

MECHANISM TO ALLOW WAITING A/C
TO SEEK SERVICE



STATISTICS ON LENGTH OF TIME SPENT IN
MAINTENANCE SERVICE BY DAY

Fig A.19.2 Wing Maintenance

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2748      ; MMT MAINTENANCE
2749      ; AN A/C ARRIVING AT MMT MAINTENANCE IS ASSIGNED A PRIORITY PROCESS-
2750      ; ING CODE IN EXACTLY THE SAME WAY IT IS DONE AT WING (ADD ALL 4 AND
2751      ; 5 LEVEL FAILURES TOGETHER AND PROCESS ON LOW VALUE FIRST). THE
2752      ; SYSTEM THEN REPAIRS THE QUICKEST FIRST. IF A SHOP IS OPEN AND
2753      ; REQUIRED THE A/C IS PROCESSED IN THAT SHOP, ELSE IT IS SENT TO A
2754      ; WAITING POOL. WHEN AN A/C COMPLETES SERVICE IT FREES THE MMT
2755      ; UNIT, RESETS THE FAILURE CODE AND NTOF FOR THE SYSTEM(S) REPAIRED,
2756      ; AND SIGNALS THE A/C WAITING IN THE MMT WAITING POOL THAT AN MMT
2757      ; UNIT IS FREE. THE A/C IN THE POOL WITH THE HIGHEST PRIORITY
2758      ; (LOWEST VALUE) THAT REQUIRES THE MMT OBTAINS IT. THE REST OF THE
2759      ; A/C ARE RETURNED TO THE MMT WAITING POOL.
2760      ; OCCASIONALLY, AN A/C WILL BE MOVED FROM THE MMT WAITING POOL TO THE
2761      ; WING MAINTENANCE FACILITY. THIS HAPPENS WHEN A WING SHOP BECOMES
2762      ; FREE AND NO A/C WAITING AT WING REQUIRE THE SHOP, BUT AN A/C
2763      ; WAITING AT MMT DOES.
2764      ; IF THE A/C FREEING THE MMT UNIT IS DONE, IT PROCEEDS TO TURNAROUND
2765      ; SERVICE. IF THE A/C REQUIRES FURTHER SERVICE, IT TRYs TO OBTAIN
2766      ; THE DESIRED MMT UNIT WHICH IS APPROPRIATE FOR REMAINING MAJOR
2767      ; PROBLEMS. IF ALL MAJOR REPAIRS ARE COMPLETED THE A/C IS SENT TO
2768      ; SQUADRON LEVEL MAINTENANCE IF IT REQUIRES ANY MINOR REPAIRS.
2769      ; UNLIKE WING SHOPS, MMTs DO NOT CONCURRENTLY REPAIR MINOR PROBLEMS.
2770      ; MMT UNITS REPAIR THE FOLLOWING SYSTEMS-
2771      ;
2772      ;
2773      ; 1 - ELECTRICAL
2774      ;
2775      ; 2 - ENGINE/FUEL
2776      ;
2777      ; 3 - HYDRAULICS/PNEUMATICS
2778      ;
2779      ; 4 - AIRFRAME
2780      ;
2781      ; 5 - COMM/NAV/INSTRUMENTS/RADAR
2782      ;
2783      ; 6 - FIRE CONTROL/WEAPONS RELEASE
2784      ;
2785      MMT ASSIGN, ATRIB(10)=0,
2786      ATRIB(17)=USERF(30), 1; MOBILE MAINTENANCE TEAM ROUTINE
2787      ACT, USERF(31).GE.4.AND.
2788      NNRSC(MMT1).GT.0, MM11; IF REQ'D AND AVAIL, GO TO
2789      ACT, USERF(32).GE.4.AND.
2790      NNRSC(MMT2).GT.0, MM21;
2791      ACT, USERF(33).GE.4.AND.
2792      NNRSC(MMT3).GT.0, MM31;
2793      ACT, USERF(34).GE.4.AND.
2794      NNRSC(MMT4).GT.0, MM41;
2795      ACT, USERF(35).GE.4.AND.
2796      NNRSC(MMT5).GT.0, MM51;
2797      ACT, USERF(36).GE.4.AND.

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2798             NNRSC(MMT6).CT.0,MM61;
2799             ACT,,,MMPI;
2800             ;
2801             MM11 AWAIT(63),MMT1/1,1;           ELECTRICAL
2802             ACT/11,USERF(91),,MM12;
2803             ;
2804             MM12 FREE,MMT1/1,1;
2805             ACT,,,MM13;
2806             ;
2807             ;
2808             MM13 ASSIGN,TRIB(18)=USERF(41),
2809             TRIB(19)=TRIB(7)+USERF(131),1;RESET FAIL CODE 0,NTOF RESET
2810             ACT,,,MOPL;           TURNAROUND SERVICE PREP
2811             ;
2812             MM21 AWAIT(64),MMT2/1,1;
2813             ACT/12,USERF(92),,MM22;           ENGINE/FUEL
2814             ;
2815             MM22 FREE,MMT2/1,1;
2816             ACT,,,MM23;
2817             ;
2818             ;
2819             MM23 ASSIGN,TRIB(18)=USERF(42),
2820             TRIB(20)=TRIB(7)+USERF(132),1;RESET FAIL CODE 0,NTOF RESET
2821             ACT,,,MOPL;           TURNAROUND SERVICE PREP
2822             ;
2823             MM31 AWAIT(65),MMT3/1,1;           HYDRAULICS/PNEUMATICS
2824             ACT/13,USERF(93),,MM32;
2825             ;
2826             MM32 FREE,MMT3/1,1;
2827             ACT,,,MM33;
2828             ;
2829             ;
2830             MM33 ASSIGN,TRIB(18)=USERF(43),
2831             TRIB(21)=TRIB(7)+USERF(133),1;RESET FAIL CODE 0,NTOF RESET
2832             ACT,,,MOPL;           TURNAROUND SERVICE PREP
2833             ;
2834             MM41 AWAIT(66),MMT4/1,1;           AIRFRAME(STRUTS,TIRES)
2835             ACT/14,USERF(94),,MM42;
2836             ;
2837             MM42 FREE,MMT4/1,1;
2838             ACT,,,MM43;
2839             ;
2840             ;
2841             MM43 ASSIGN,TRIB(18)=USERF(44),
2842             TRIB(22)=TRIB(7)+USERF(134),1;RESET FAIL CODE 0,NTOF RESET
2843             ACT,,,MOPL;           TURNAROUND SERVICE PREP
2844             ;
2845             MM51 AWAIT(67),MMT5/1,1;           COMM/NAV/INST/RADIO/RADAR
2846             ACT/15,USERF(95),,MM52;
2847             ;

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2848      MM52 FREE,MMT5/1,1;
2849      ACT,,,MM53;
2850      ;
2851      ;
2852      MM53 ASSIGN,ATRIB(18)=USERF(45),
2853      ATRIB(23)=ATRIB(7)+USERF(135),1;RESET FAIL CODE 0,NTOF RESET
2854      ACT,,,MOPL;          TURNAROUND SERVICE PREP
2855      ;
2856      MM61 AWAIT(68),MMT6/1,1;
2857      ACT/16,USERF(96),,MM62;          FIRE CONTROL/WEAPONS RELEASE
2858      ;
2859      MM62 FREE,MMT6/1,1;
2860      ACT,,,MM63;
2861      ;
2862      ;
2863      MM63 ASSIGN,ATRIB(18)=USERF(46),
2864      ATRIB(24)=ATRIB(7)+USERF(136),1;RESET FAIL CODE 0,NTOF RESET
2865      ACT,,,MOPL;          TURNAROUND SERVICE PREP
2866      ;
2867      MMP1 CLOSE,MNTPPOOL,1;
2868      ACT,,,MMP2;
2869      ;
2870      MMP2 AWAIT(69),MNTPPOOL,1;          WAIT FOR MMT SERVICE
2871      ACT,.0002,,MMPG;          A/C HAVE A CHANCE TO GO FOR A
2872      ;          MAJOR REPAIR IF SPACE AVAILABLE
2873      ;          IN A WING SHOP THEY REQUIRE
2874      ;          ELSE THEY LOOP BACK TO THE MMT
2875      ;          ENTRY ROUTINE
2876      MMPG GOON,1;
2877      ACT,,,USERF(113).EQ.1,MMP3;
2878      ACT,,,MNT;
2879      ;
2880      MMP3 ASSIGN,ATRIB(3)=USERF(22),
2881      ATRIB(3)=4,XX(93)=1,1;          UNPARK AT SQ,SET WING PARK,CLOSE
2882      ;          PATHWAY TO WING
2883      ACT,.0001,,MMP4;          DELAY WHILE OTHER A/C IN THE
2884      ;          MNTPPOOL LOOP BACK TO MMT ENTRY
2885      MMP4 ASSIGN,ATRIB(13)=ATRIB(1),
2886      XX(93)=0,1;          RESET PATH TO WC OPEN
2887      ACT,USERF(66),,WC;
2888      ;
2889      MOPL OPEN,MNTPPOOL,1;
2890      ACT,.0001,USERF(37).GE.2,SMXC;
2891      ACT,.0001,,MMRS;
2892      ;
2893      MMRS ASSIGN,ATRIB(16)=0,
2894      ATRIB(17)=0,1;          RESET BATTLE DAMAGE AND SYM ABORT CODE
2895      ACT,,,ATRIB(27).NE.0,CL15;
2896      ACT,,,ATRIB(26).NE.0,CL14;
2897      ACT,,,CL13;

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2898	;	STATISTICS ON MMT SERVICE
2899	CL15 COLCT,INTVL(27),SQSERVCOMPDAY03,,1;	
2900	ACT,,,MXT1;	
2901	;	
2902	CL14 COLCT,INTVL(26),SQSERVCOMPDAY02,,1;	
2903	ACT,,,MXT1;	
2904	;	
2905	CL13 COLCT,INTVL(25),SQSERVCOMPDAY01,,1;	
2906	ACT,,,MXT1;	
2907	;	

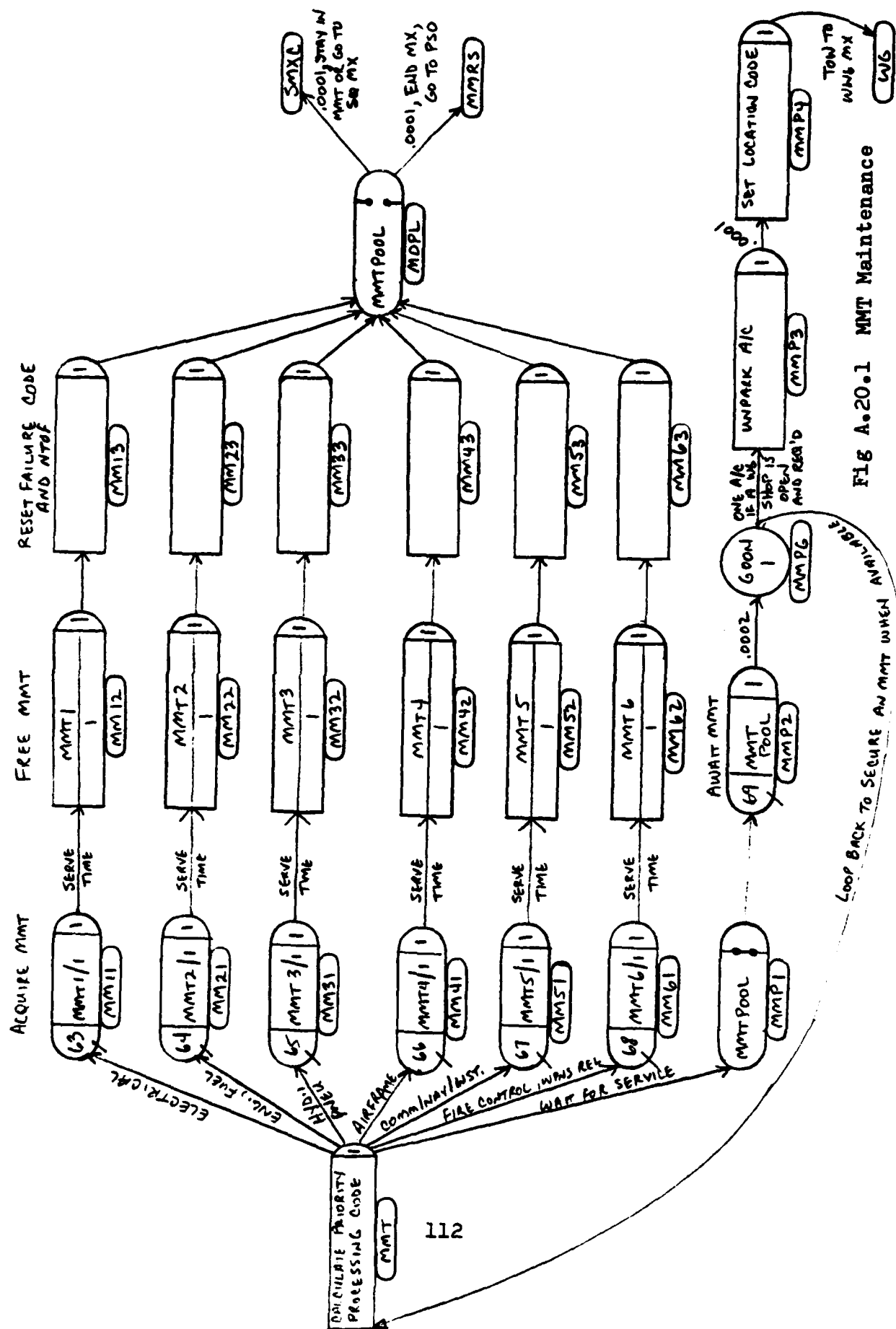


Fig A.20.1 MMT Maintenance

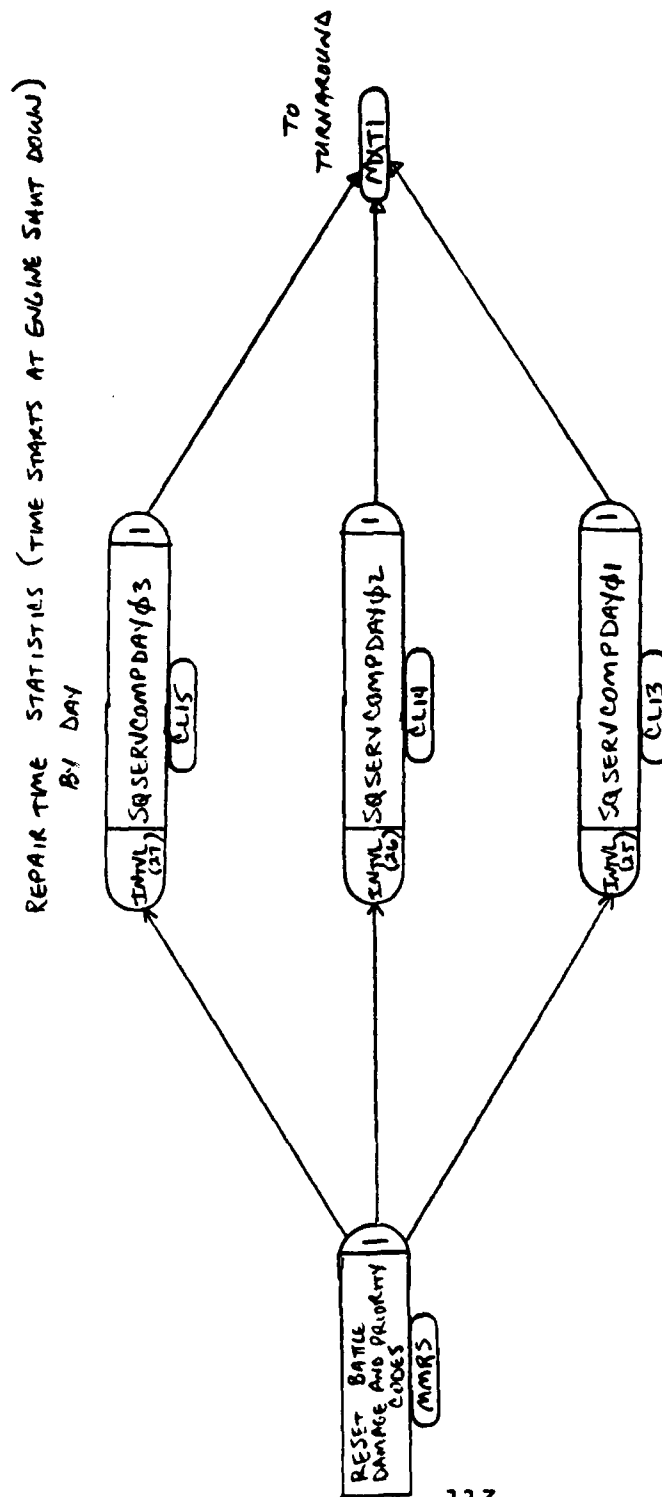


Fig A.20.2 MMT Maintenance

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2908 ; SQUADRON MAINTENANCE
2909 ; A/C WITH MINOR PROBLEMS ARE REPAIRED CONCURRENTLY. THIS DIFFERS
2910 ; FROM WING AND MMT. THE A/C PROCESS THROUGH SQUADRON MAINTENANCE
2911 ; RECEIVING THE SERVICE REQUIRED. WHEN ALL SERVICE IS COMPLETED,
2912 ; THE FAILURE CODE AND NTOF (IF FAILURE WAS LEVEL 2 OR 3) IS RESET.
2913 ; A/C THAT STILL HAVE A MAJOR PROBLEM ARE SENT TO OBTAIN AN MMT
2914 ; UNIT. THOSE A/C THAT ARE FINISHED WITH MAINTENANCE ARE SENT TO
2915 ; TURNAROUND SERVICE. EACH SQUADRON SHOP HAS ITS OWN SPECIALTY-
2916 ;
2917 ; 1 - HYDRAULICS/PNEUMATICS AND AIRFRAME
2918 ;
2919 ; 2 - ENGINE/FUEL
2920 ;
2921 ; 3 - ELECTRICAL AND COMM/NAV/INSTRUMENTS/RADAR
2922 ;
2923 ; 4 - FIRE CONTROL/WEAPONS RELEASE
2924 ;
2925 SM1 GOON,4; SQUADRON MAINTENANCE ROUTINE
2926 ACT,,USERF(33).EQ.2.OR.
2927 USERF(33).EQ.3.OR.
2928 USERF(34).EQ.2.OR.
2929 USERF(34).EQ.3,SQ11; HYDRAULICS/PNEUMATICS OR AIRFRAME
2930 ACT,,USERF(32).EQ.2.OR.
2931 USERF(32).EQ.3,SQ12; ENGINE/FUEL
2932 ACT,,USERF(31).EQ.2.OR.
2933 USERF(31).EQ.3.OR.
2934 USERF(35).EQ.2.OR.
2935 USERF(35).EQ.3,SQ13; ELECTRICAL OR COMM/NAV/INST/RADAR
2936 ACT,,USERF(36).EQ.2.OR.
2937 USERF(36).EQ.3,SQ14; FIRE CONTROL/WEAPONS RELEASE
2938 ACT,,USERF(33).NE.2.AND.USERF(33).NE.3.AND.
2939 USERF(34).NE.2.AND.USERF(34).NE.3,SQ01;
2940 ACT,,USERF(32).NE.2.AND.USERF(32).NE.3,SQ02;
2941 ACT,,USERF(31).NE.2.AND.USERF(31).NE.3.AND.
2942 USERF(35).NE.2.AND.USERF(35).NE.3,SQ03;
2943 ACT,,USERF(36).NE.2.AND.USERF(36).NE.3,SQ04;
2944 ;
2945 SQ11 AWAIT(70),SQ1MX1/1,1; WAIT FOR SERVICE
2946 ACT/17,USERF(101),,SQ15;
2947 ;
2948 SQ15 FREE,SQ1MX1/1,1;
2949 ACT,,SQ01;
2950 ;
2951 SQ12 AWAIT(71),SQ1MX2/1,1;
2952 ACT/18,USERF(102),,SQ16;
2953 ;
2954 SQ16 FREE,SQ1MX2/1,1;
2955 ACT,,SQ02;
2956 ;
2957 SQ13 AWAIT(72),SQ1MX3/1,1;

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2958          ACT/19,USERF(103),,SQ17;
2959      ;
2960      SQ17 FREE,SQ1MX3/1,1;
2961          ACT,,,SQQ3;
2962      ;
2963      SQ14 AWAIT(73),SQ1MX4/1,1;
2964          ACT/20,USERF(104),,SQ18;
2965      ;
2966      SQ18 FREE,SQ1MX4/1,1;
2967          ACT,,,SQQ4;
2968      SM2 GOON,4;                                SQUADRON MAINTENANCE ROUTINE
2969          ACT,,USERF(33).EQ.2.OR.
2970          USERF(33).EQ.3.OR.
2971          USERF(34).EQ.2.OR.
2972          USERF(34).EQ.3,SQ21;                    HYDRAULICS/PNEUMATICS OR AIRFRAME
2973          ACT,,USERF(32).EQ.2.OR.
2974          USERF(32).EQ.3,SQ22;                    ENGINE/FUEL
2975          ACT,,USERF(31).EQ.2.OR.
2976          USERF(31).EQ.3.OR.
2977          USERF(35).EQ.2.OR.
2978          USERF(35).EQ.3,SQ23;                    ELECTRICAL OR COMM/NAV/INST/RADAR
2979          ACT,,USERF(36).EQ.2.OR.
2980          USERF(36).EQ.3,SQ24;                    FIRE CONTROL/WEAPONS RELEASE
2981          ACT,,USERF(33).NE.2.AND.USERF(33).NE.3.AND.
2982          USERF(34).NE.2.AND.USERF(34).NE.3,SQQ1;
2983          ACT,,USERF(32).NE.2.AND.USERF(32).NE.3,SQQ2;
2984          ACT,,USERF(31).NE.2.AND.USERF(31).NE.3.AND.
2985          USERF(35).NE.2.AND.USERF(35).NE.3,SQQ3;
2986          ACT,,USERF(36).NE.2.AND.USERF(36).NE.3,SQQ4;
2987      ;
2988      SQ21 AWAIT(74),SQ2MX1/1,1;                    WAIT FOR SERVICE
2989          ACT/21,USERF(101),,SQ25;
2990      ;
2991      SQ25 FREE,SQ2MX1/1,1;
2992          ACT,,,SQQ1;
2993      ;
2994      SQ22 AWAIT(75),SQ2MX2/1,1;
2995          ACT/22,USERF(102),,SQ26;
2996      ;
2997      SQ26 FREE,SQ2MX2/1,1;
2998          ACT,,,SQQ2;
2999      ;
3000      SQ23 AWAIT(76),SQ2MX3/1,1;
3001          ACT/23,USERF(103),,SQ27;
3002      ;
3003      SQ27 FREE,SQ2MX3/1,1;
3004          ACT,,,SQQ3;
3005      ;
3006      SQ24 AWAIT(77),SQ2MX4/1,1;
3007          ACT/24,USERF(104),,SQ28;

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3008 ;
3009 SQ28 FREE,SQ2MX4/1,1;
3010 ACT,,,SQ04;
3011 SM3 GOON,4; SQUADRON MAINTENANCE ROUTINE
3012 ACT,,USERF(33).EQ.2.OR.
3013 USERF(33).EQ.3.OR.
3014 USERF(34).EQ.2.OR.
3015 USERF(34).EQ.3,SQ31; HYDRAULICS/PNEUMATICS OR AIRFRAME
3016 ACT,,USERF(32).EQ.2.OR.
3017 USERF(32).EQ.3,SQ32; ENGINE/FUEL
3018 ACT,,USERF(31).EQ.2.OR.
3019 USERF(31).EQ.3.OR.
3020 USERF(35).EQ.2.OR.
3021 USERF(35).EQ.3,SQ33; ELECTRICAL OR COMM/NAV/INST/RADAR
3022 ACT,,USERF(36).EQ.2.OR.
3023 USERF(36).EQ.3,SQ34; FIRE CONTROL/WEAPONS RELEASE
3024 ACT,,USERF(33).NE.2.AND.USERF(33).NE.3.AND.
3025 USERF(34).NE.2.AND.USERF(34).NE.3,SQ01;
3026 ACT,,USERF(32).NE.2.AND.USERF(32).NE.3,SQ02;
3027 ACT,,USERF(31).NE.2.AND.USERF(31).NE.3.AND.
3028 USERF(35).NE.2.AND.USERF(35).NE.3,SQ03;
3029 ACT,,USERF(36).NE.2.AND.USERF(36).NE.3,SQ04;
3030 ;
3031 SQ31 AWAIT(78),SQ3MX1/1,1; WAIT FOR SERVICE
3032 ACT/25,USERF(101),,SQ35;
3033 ;
3034 SQ35 FREE,SQ3MX1/1,1;
3035 ACT,,,SQ01;
3036 ;
3037 SQ32 AWAIT(79),SQ3MX2/1,1;
3038 ACT/26,USERF(102),,SQ36;
3039 ;
3040 SQ36 FREE,SQ3MX2/1,1;
3041 ACT,,,SQ02;
3042 ;
3043 SQ33 AWAIT(80),SQ3MX3/1,1;
3044 ACT/27,USERF(103),,SQ37;
3045 ;
3046 SQ37 FREE,SQ3MX3/1,1;
3047 ACT,,,SQ03;
3048 ;
3049 SQ34 AWAIT(81),SQ3MX4/1,1;
3050 ACT/28,USERF(104),,SQ38;
3051 ;
3052 SQ38 FREE,SQ3MX4/1,1;
3053 ACT,,,SQ04;
3054 SM4 GOON,4; SQUADRON MAINTENANCE ROUTINE
3055 ACT,,USERF(33).EQ.2.OR.
3056 USERF(33).EQ.3.OR.
3057 USERF(34).EQ.2.OR.

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3058	USERF(34).EQ.3,SQ41;	HYDRAULICS/PNEUMATICS OR AIRFRAME
3059	ACT,,USERF(32).EQ.2.OR.	
3060	USERF(32).EQ.3,SQ42;	ENGINE/FUEL
3061	ACT,,USERF(31).EQ.2.OR.	
3062	USERF(31).EQ.3.OR.	
3063	USERF(35).EQ.2.OR.	
3064	USERF(35).EQ.3,SQ43;	ELECTRICAL OR COMM/NAV/INST/RADAR
3065	ACT,,USERF(36).EQ.2.OR.	
3066	USERF(36).EQ.3,SQ44;	FIRE CONTROL/WEAPONS RELEASE
3067	ACT,,USERF(33).NE.2.AND.USERF(33).NE.3.AND.	
3068	USERF(34).NE.2.AND.USERF(34).NE.3,SQ41;	
3069	ACT,,USERF(32).NE.2.AND.USERF(32).NE.3,SQ42;	
3070	ACT,,USERF(31).NE.2.AND.USERF(31).NE.3.AND.	
3071	USERF(35).NE.2.AND.USERF(35).NE.3,SQ43;	
3072	ACT,,USERF(36).NE.2.AND.USERF(36).NE.3,SQ44;	
3073	;	
3074	SQ41 AWAIT(82),SQ4MX1/1,1;	WAIT FOR SERVICE
3075	ACT/29,USERF(101),,SQ45;	
3076	;	
3077	SQ45 FREE,SQ4MX1/1,1;	
3078	ACT,,SQ41;	
3079	;	
3080	SQ42 AWAIT(83),SQ4MX2/1,1;	
3081	ACT/30,USERF(102),,SQ46;	
3082	;	
3083	SQ46 FREE,SQ4MX2/1,1;	
3084	ACT,,SQ42;	
3085	;	
3086	SQ43 AWAIT(84),SQ4MX3/1,1;	
3087	ACT/31,USERF(103),,SQ47;	
3088	;	
3089	SQ47 FREE,SQ4MX3/1,1;	
3090	ACT,,SQ43;	
3091	;	
3092	SQ44 AWAIT(85),SQ4MX4/1,1;	
3093	ACT/32,USERF(104),,SQ48;	
3094	;	
3095	SQ48 FREE,SQ4MX4/1,1;	
3096	ACT,,SQ44;	
3097	SMS GOON,4;	SQUADRON MAINTENANCE ROUTINE
3098	ACT,,USERF(33).EQ.2.OR.	
3099	USERF(33).EQ.3.OR.	
3100	USERF(34).EQ.2.OR.	
3101	USERF(34).EQ.3,SQ51;	HYDRAULICS/PNEUMATICS OR AIRFRAME
3102	ACT,,USERF(32).EQ.2.OR.	
3103	USERF(32).EQ.3,SQ52;	ENGINE/FUEL
3104	ACT,,USERF(31).EQ.2.OR.	
3105	USERF(31).EQ.3.OR.	
3106	USERF(35).EQ.2.OR.	
3107	USERF(35).EQ.3,SQ53;	ELECTRICAL OR COMM/NAV/INST/RADAR

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3108          ACT,,USERF(36).EQ.2.OR.
3109          USERF(36).EQ.3,SQ54;          FIRE CONTROL/WEAPONS RELEASE
3110          ACT,,USERF(33).NE.2.AND.USERF(33).NE.3.AND.
3111          USERF(34).NE.2.AND.USERF(34).NE.3,SQQ1;
3112          ACT,,USERF(32).NE.2.AND.USERF(32).NE.3,SQQ2;
3113          ACT,,USERF(31).NE.2.AND.USERF(31).NE.3.AND.
3114          USERF(35).NE.2.AND.USERF(35).NE.3,SQQ3;
3115          ACT,,USERF(36).NE.2.AND.USERF(36).NE.3,SQQ4;
3116          ;
3117          SQ51 AWAIT(86),SQ5MX1/1,1;          WAIT FOR SERVICE
3118          ACT/33,USERF(101),,SQ55;
3119          ;
3120          SQ55 FREE,SQ5MX1/1,1;
3121          ACT,,SQQ1;
3122          ;
3123          SQ52 AWAIT(87),SQ5MX2/1,1;
3124          ACT/34,USERF(102),,SQ56;
3125          ;
3126          SQ56 FREE,SQ5MX2/1,1;
3127          ACT,,SQQ2;
3128          ;
3129          SQ53 AWAIT(88),SQ5MX3/1,1;
3130          ACT/35,USERF(103),,SQ57;
3131          ;
3132          SQ57 FREE,SQ5MX3/1,1;
3133          ACT,,SQQ3;
3134          ;
3135          SQ54 AWAIT(89),SQ5MX4/1,1;
3136          ACT/36,USERF(104),,SQ58;
3137          ;
3138          SQ58 FREE,SQ5MX4/1,1;
3139          ACT,,SQQ4;
3140          SM6 GOON,4;          SQUADRON MAINTENANCE ROUTINE
3141          ACT,,USERF(33).EQ.2.OR.
3142          USERF(33).EQ.3.OR.
3143          USERF(34).EQ.2.OR.
3144          USERF(34).EQ.3,SQ61;          HYDRAULICS/PNEUMATICS OR AIRFRAME
3145          ACT,,USERF(32).EQ.2.OR.
3146          USERF(32).EQ.3,SQ62;          ENGINE/FUEL
3147          ACT,,USERF(31).EQ.2.OR.
3148          USERF(31).EQ.3.OR.
3149          USERF(35).EQ.2.OR.
3150          USERF(35).EQ.3,SQ63;          ELECTRICAL OR COMM/NAV/INST/RADAR
3151          ACT,,USERF(36).EQ.2.OR.
3152          USERF(36).EQ.3,SQ64;          FIRE CONTROL/WEAPONS RELEASE
3153          ACT,,USERF(33).NE.2.AND.USERF(33).NE.3.AND.
3154          USERF(34).NE.2.AND.USERF(34).NE.3,SQQ1;
3155          ACT,,USERF(32).NE.2.AND.USERF(32).NE.3,SQQ2;
3156          ACT,,USERF(31).NE.2.AND.USERF(31).NE.3.AND.
3157          USERF(35).NE.2.AND.USERF(35).NE.3,SQQ3;

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3158	ACT,,USERF(36).NE.2.AND.USERF(36).NE.3,SQ04;	
3159	;	
3160	SQ01 AWAIT(90),SQ6MX1/1,1;	WAIT FOR SERVICE
3161	ACT/37,USERF(101),,SQ65;	
3162	;	
3163	SQ65 FREE,SQ6MX1/1,1;	
3164	ACT,,SQ01;	
3165	;	
3166	SQ62 AWAIT(91),SQ6MX2/1,1;	
3167	ACT/38,USERF(102),,SQ66;	
3168	;	
3169	SQ66 FREE,SQ6MX2/1,1;	
3170	ACT,,SQ02;	
3171	;	
3172	SQ63 AWAIT(92),SQ6MX3/1,1;	
3173	ACT/39,USERF(103),,SQ67;	
3174	;	
3175	SQ67 FREE,SQ6MX3/1,1;	
3176	ACT,,SQ03;	
3177	;	
3178	SQ64 AWAIT(93),SQ6MX4/1,1;	
3179	ACT/40,USERF(104),,SQ68;	
3180	;	
3181	SQ68 FREE,SQ6MX4/1,1;	
3182	ACT,,SQ04;	
3183	SQ01 QUEUE(94),,,SQMA;	Q'S BEFORE MATCH IN COMMON
3184	;	
3185	SQ02 QUEUE(95),,,SQMA;	PROCESSOR TO PUT AN A/C BACK
3186	;	
3187	SQ03 QUEUE(96),,,SQMA;	TOGETHER AFTER IT WAS SPLIT UP
3188	;	
3189	SQ04 QUEUE(97),,,SQMA;	AND RUN THRU SQ MAINTENANCE
3190	;	
3191	SQMA MATCH,2,SQ01/REDO,SQ02/TERM,	
3192	SQ03/TERM,SQ04/TERM;	
3193	;	
3194	TERM COON,1;	THE THREE REDUNDANT A/C ENTITIES
3195	TERMINATE;	ARE DESTROYED AND THE ENTITY
3196	;	CONTINUES AS A SINGLE A/C
3197	;	
3198	REDO COON,1;	POST MX CODE RESET ROUTINE
3199	;	RESETS NEXT TIME OF FAILURE
3200	;	ALSO CALLED NTOF IN COMMENTS
3201	;	RESETS EACH APPROPRIATE
3202	;	SYSTEM'S ATTRIBUTE
3203	ACT,,USERF(31).EQ.2.OR,	
3204	USERF(31).EQ.3,RED1;	TO SYSTEM 1 RESET
3205	ACT,,USERF(32).EQ.2.OR,	
3206	USERF(32).EQ.3,RED2;	TO SYSTEM 2 RESET
3207	ACT,,USERF(33).EQ.2.OR,	

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3208          USERF(33).EQ.3,RED3;      TO SYSTEM 3 RESET
3209      ACT,,USERF(34).EQ.2.OR.
3210          USERF(34).EQ.3,RED4;      TO SYSTEM 4 RESET
3211      ACT,,USERF(35).EQ.2.OR.
3212          USERF(35).EQ.3,RED5;      TO SYSTEM 5 RESET
3213      ACT,,USERF(36).EQ.2.OR.
3214          USERF(36).EQ.3,RED6;      TO SYSTEM 6 RESET
3215      ACT,,USERF(37).GE.4,DLMT;      STILL NEEDS MAJOR WORK- GO TO MMT
3216      ACT,,,MMRS;                     ELSE, BEGIN ROUTING TO PSO FOR
3217      ;                               TURNAROUND SERVICE
3218      RED1 ASSIGN,ATRIB(19)=ATRIB(7)+USERF(131),
3219          ATRIB(18)=USERF(41),1;
3220      ACT,,,REDO;                      SYSTEM 1 RESET
3221      ;
3222      RED2 ASSIGN,ATRIB(20)=ATRIB(7)+USERF(132),
3223          ATRIB(18)=USERF(42),1;
3224      ACT,,,REDO;                      SYSTEM 2 RESET
3225      ;
3226      RED3 ASSIGN,ATRIB(21)=ATRIB(7)+USERF(133),
3227          ATRIB(18)=USERF(43),1;
3228      ACT,,,REDO;                      SYSTEM 3 RESET
3229      ;
3230      RED4 ASSIGN,ATRIB(22)=ATRIB(7)+USERF(134),
3231          ATRIB(18)=USERF(44),1;
3232      ACT,,,REDO;                      SYSTEM 4 RESET
3233      ;
3234      RED5 ASSIGN,ATRIB(23)=ATRIB(7)+USERF(135),
3235          ATRIB(18)=USERF(45),1;
3236      ACT,,,REDO;                      SYSTEM 5 RESET
3237      ;
3238      RED6 ASSIGN,ATRIB(24)=ATRIB(7)+USERF(136),
3239          ATRIB(18)=USERF(46),1;
3240      ACT,,,REDO;                      SYSTEM 6 RESET
3241      ;

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COMMON PROCESSING AREA FOR ALL SQUADRONS
WHEN ALL SERVICE COMPLETED A/C IS
RECONSTRUCTED AND ALLOWED TO PROCEED

W ≡ (76, 74, 78, 82, 86, 90) X ≡ (71, 75, 79, 83, 87, 91)
Y ≡ (72, 76, 80, 84, 88, 92) Z ≡ (73, 77, 81, 85, 89, 93)

INDIVIDUAL SQ. CONCURRENT SERVICE AREA

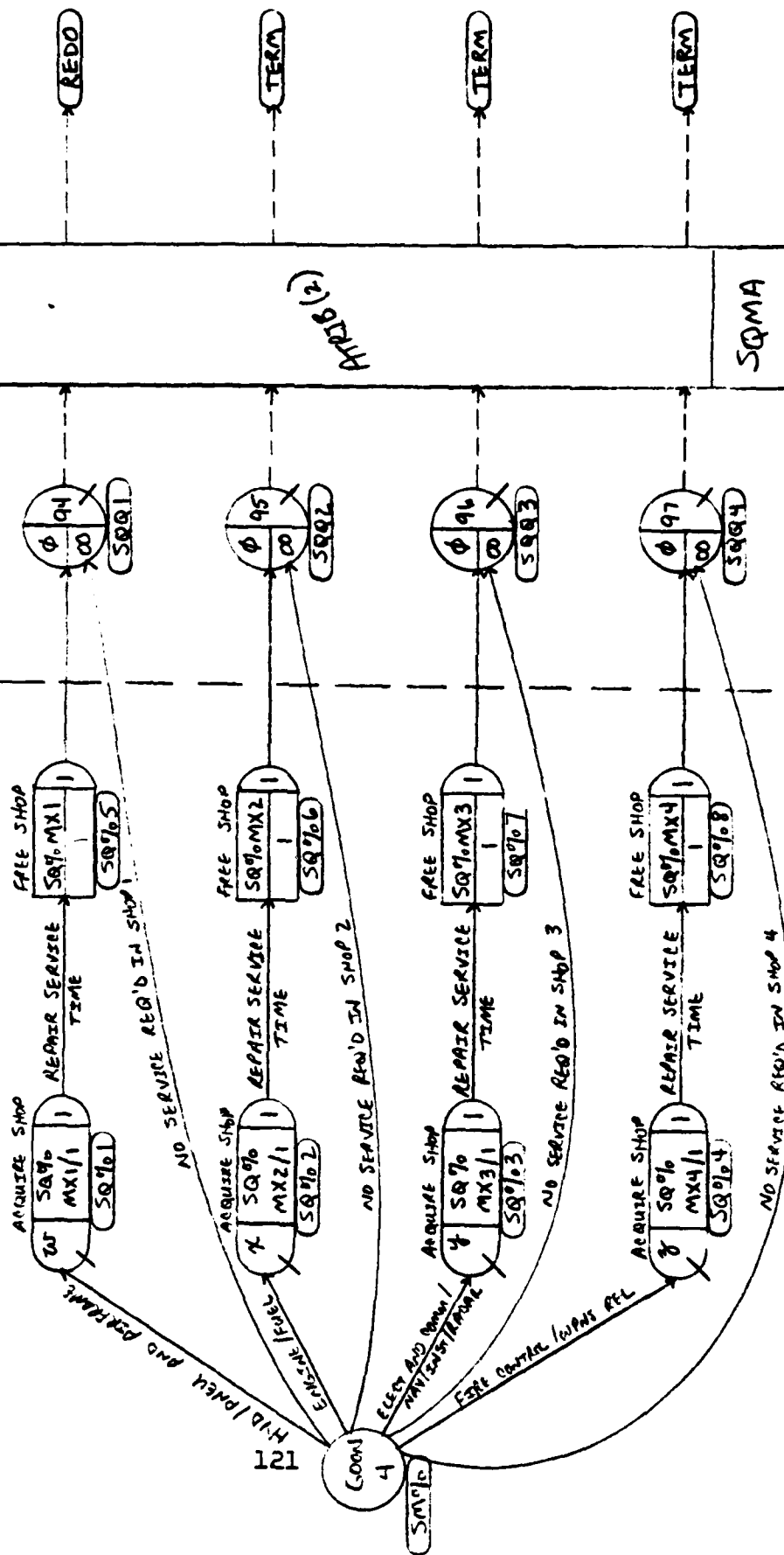
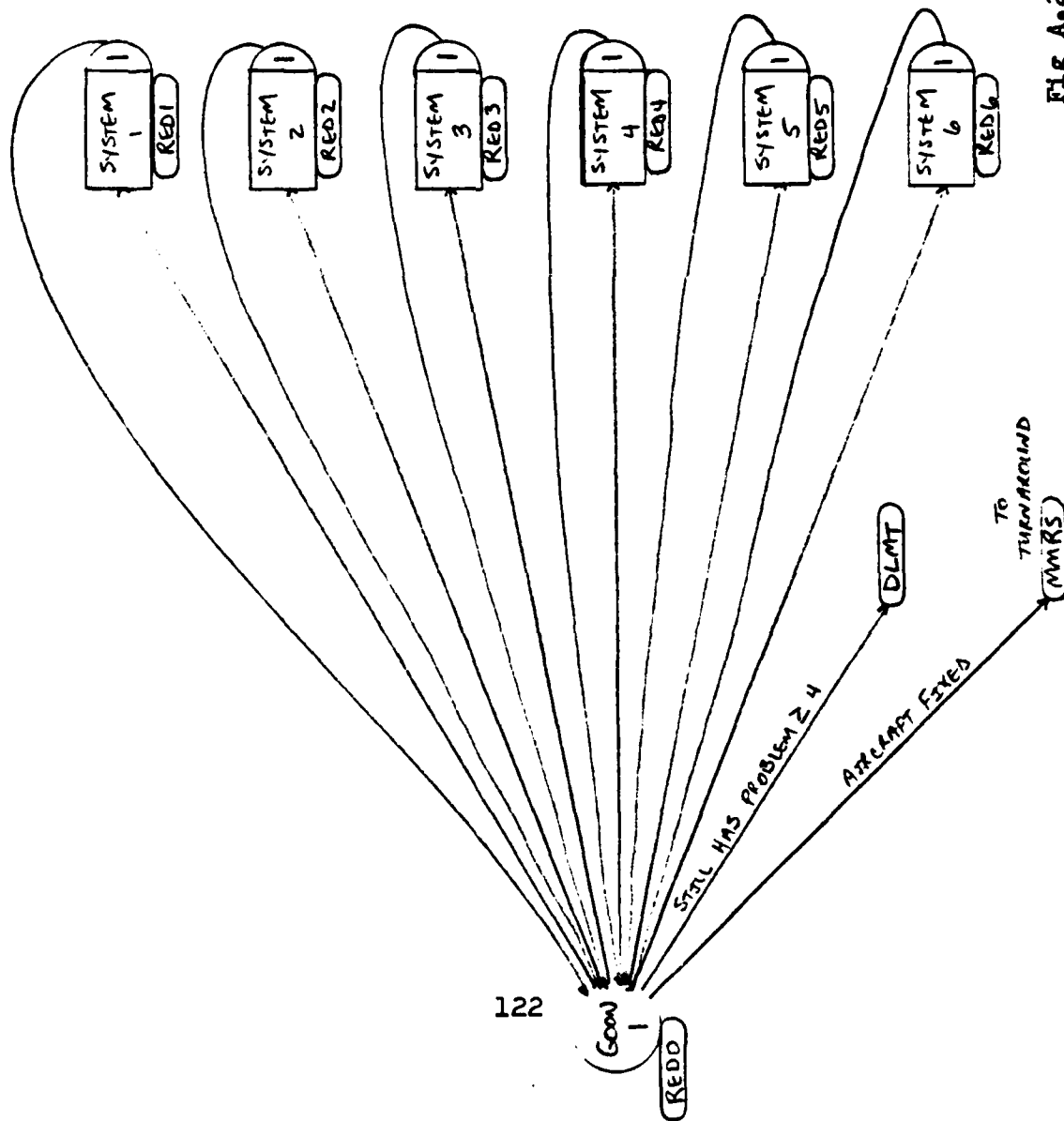


Fig A.21.1 Squadron Maintenance

% ≡ 1 THROUGH 6



MECHANISM TO RESET
APPROPRIATE FAILURE
CODES AND NTOF'S

Fig A.21.2 Squadron Maintenance

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3242 ; EXECUTIVE NETWORK
3243 ; THE EXECUTIVE NETWORK CONTROLS THE AIRFIELD MODEL. THE USER
3244 ; INPUTS THE TIMES TO INITIATE KEY ACTIVITIES- SCHEDULER, NIGHT
3245 ; PARKING, QRA CHANGEOVER, AND RESUPPLY AND RECONFIGURATION.
3246 ; THE MASTER CLOCK INITIATES EACH ONE OF THESE ACTIVITIES AT THE
3247 ; USER SPECIFIED TIME.
3248 ; WHEN SCHEDULER IS INITIATED, THE FIRST THING THAT IS DONE IS
3249 ; INITIALIZATION OF THE FRAG REQUIREMENT FOR THAT DAY. AFTER
3250 ; INITIALIZATION, THE SCHEDULER BEGINS TO ORGANIZE AND RELEASE
3251 ; MISSIONS. THIS PROCESS IS CONTINUED UNTIL NIGHTFALL.
3252 ; NIGHT PARKING TRY'S TO PARK ALL A/C IN THE BEST POSSIBLE PARKING
3253 ; SPOT FOR PROTECTION FROM AIR ATTACKS. THIS MEANS A/C ARE
3254 ; DOUBLED UP AT NIGHT IN THE SHELTERS, EXCEPT THOSE SHELTERS WHICH
3255 ; CONTAIN QRA A/C.
3256 ; QRA CHANGEOVER IS AS THE NAME IMPLIES. THE PILOTS ON ALERT ARE
3257 ; REPLACED BY FRESH PILOTS. A/C OF A SQUADRON WHICH HAS BEEN RE-
3258 ; SUPPLIED BY A REPLACEMENT UNIT ARE SWITCHED.
3259 ; RESUPPLY AND RECONFIGURE CAN ALSO BE INITIATED BY THE MASTER
3260 ; CLOCK. RESUPPLY DETERMINES IF A SQUADRON REQUIRES A FRESH
3261 ; UNIT BE FLOWN IN TO REPLACE IT. IF SO, IT SCHEDULES A NEW
3262 ; SQUADRON TO ARRIVE THE FOLLOWING DAY. RECONFIGURE PREPARES
3263 ; THE A/C FOR THE NEXT DAY'S FRAG. IT DETERMINES HOW MANY SQUAD-
3264 ; RONS WILL BE CONFIGURED FOR EACH GEOGRAPHIC AREA THE WINGS WILL
3265 ; BE GOING TO. AFTER RESUPPLY/RECONFIGURATION IS COMPLETED, THE
3266 ; JUNK FILE IS CLEANED OUT TO PREPARE FOR THE FOLLOWING DAY. A
3267 ; PRINT OUT IS AVAILABLE BY USING LEVEL 1 PRINT OPTION IN THE FORTRAN.
3268 ; WHEN ALL MAJOR EVENTS HAVE BEEN COMPLETED, OR WHEN THE USER HAS
3269 ; DETERMINED, THE MASTER CLOCK TERMINATES ITSELF AND THE SIMULA-
3270 ; TION RUN COMES TO A STOP.
3271 ;
3272 ;*****
3273 ; EXECUTIVE NETWORK
3274 ;*****
3275 ;
3276 ;
3277 EXEC CREATE,,,1,1;
3278 ACT,1;
3279 ;
3280 EXE1 EVENT,1,2; MASTER CLOCK
3281 ACT,XX(98),,EXE1;
3282 ACT,,XX(96).EQ.1,EXE2;
3283 ACT,,XX(96).EQ.2,EXE4;
3284 ACT,,XX(96).EQ.3,EXE6;
3285 ACT,,XX(96).EQ.4,EXE7;
3286 ACT,,XX(96).EQ.8,EXTM;
3287 ;
3288 EXE2 EVENT,2,1;
3289 ACT,,EXE3;
3290 ;
3291 EXE3 EVENT,3,1; SCHEDULER

```

```

3292          ACT,,XX(98),XX(96).EQ.8,EXE3;
3293          ACT,,XX(96).EQ.1,EXR1;
3294          ACT,,XX(96).EQ.2,EXR2;
3295          ACT,,XX(96).EQ.3,EXR3;
3296          ACT,REL(PSOX),XX(96).EQ.7,EXD2;
3297          ACT,,XX(96).EQ.4,EXR4;
3298          ACT,,XX(96).EQ.5,EXR5;
3299          ACT,,XX(96).EQ.6,EXR6;
3300          ACT,,XX(96).EQ.8,EXTM;
3301      ;
3302      EXR1 OPEN,RDYPPOOL1,1;
3303          ACT,,0001,,EXE3;
3304      ;
3305      EXR2 OPEN,RDYPPOOL2,1;
3306          ACT,,0001,,EXE3;
3307      ;
3308      EXR3 OPEN,RDYPPOOL3,1;
3309          ACT,,0001,,EXE3;
3310      ;
3311      EXD2 GOON,1;
3312          ACT,,0016,,EXE3;
3313      ;
3314      EXR4 OPEN,RDYPPOOL4,1;
3315          ACT,,0001,,EXE3;
3316      ;
3317      EXR5 OPEN,RDYPPOOL5,1;
3318          ACT,,0001,,EXE3;
3319      ;
3320      EXR6 OPEN,RDYPPOOL6,1;
3321          ACT,,0001,,EXE3;
3322      ;
3323      ;
3324      EXE4 EVENT,4,1;          INITIAL NIGHT PARKING
3325      ;
3326      EXE5 EVENT,5,1;
3327          ACT,REL(PSOX),XX(96).EQ.1,EXD4;
3328          ACT,,XX(96).EQ.8,EXTM;
3329      ;
3330      EXD4 GOON,1;
3331          ACT,,0001,,EXE5;
3332      ;
3333      ;
3334      EXE6 EVENT,6,1;          SWITCH QRA CREWS
3335          ACT,,EXTM;
3336      ;
3337      EXE7 EVENT,7,1;          SET UP RESUPPLY REQUEST FOR
3338      ;                          NEXT DAY, RECONFIGURE A/C
3339      ;
3340      EXJ1 OPEN,JUNK,1;          DISPOSE OF JUNK FILE
3341          ACT,,0001;

```

3342	;
3343	EXJ2 CLOSE,JUNK,1;
3344	;
3345	EXTM TERMINATE;
3346	;
3347	;
3348	ENDNETWORK;
3349	;
3350	INIT,0,4320;
3351	MONTR,TRACE,1400,1600,1,2,46,18,13;
3352	FIN;

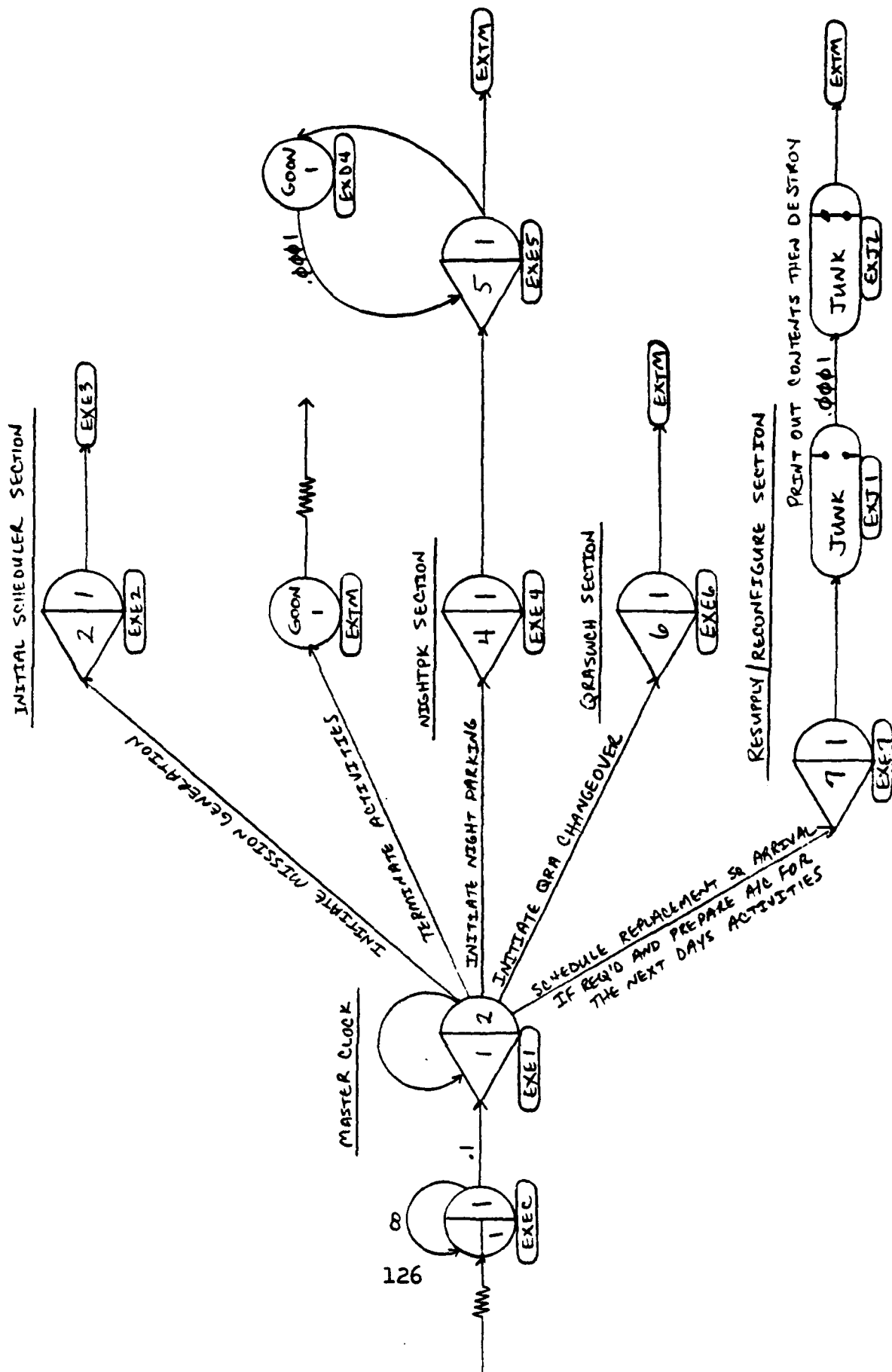


Fig A.22.1 Executive Network

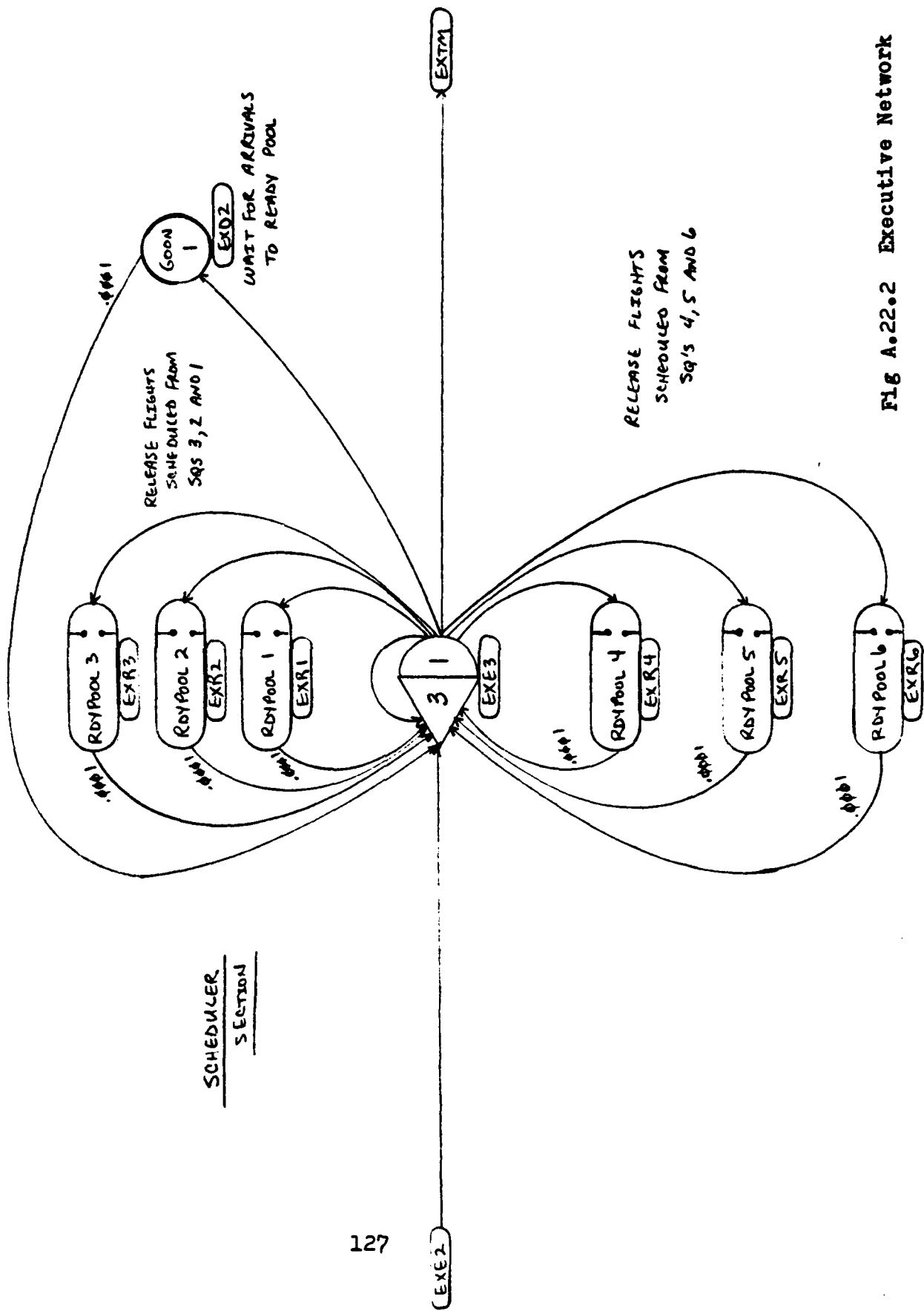


Fig A.22.2 Executive Network

Appendix B: FORTRAN Coding

This appendix contains a complete listing of the FORTRAN code. Extensive comments have been added to the code to help the reader/user understand the purpose and function of each routine. The code is easily transportable and should require no modification for any other machine. However, the code is not independent of the supporting SLAM processor, since many function calls are to SLAM provided routines.

```

1      C THE FOLLOWING IS THE MAIN PROGRAM. THE SIZE OF MEMORY USED TO
2      C STORE THE ENTITIES AND SLAM PROGRAM IS SET IN THIS PROGRAM.
3      C THE VALUE OF 46000 IS THE SIZE USED FOR THIS SIMULATION RUN.
4      C
5      PROGRAM MAIN(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,TAPE7)
6      DIMENSION NSET(46000)
7      COMMON/SCOM1/ATRIB(100),DS(100),DDL(100),DTNOW,II,MFA,MSTOP,NCLNR
8      Q,NCRDR,NPANT,NNRUN,NNSET,NTAPE,SS(100),SSL(100),TNEXT,TNOW,XX(100)
9      COMMON /SET/46000)
10     EQUIVALENCE (NSET(1),/SET(1))
11     NNSET=46000
12     NCRDR=5
13     NPANT=6
14     NTAPE=7
15     CALL SLAM
16     STOP
17     END
18     C
19     C
20     C
21     C
22     C
23     C
24     C
25     C

```

```

26      0
27      SUBROUTINE USER1
28
29      COMMON/SCOM1/ ATR10(100),DD(100),EDL(100),DTNOW,II,MFA,MSTOP,NCLNR
30      ,NCRDR,NPRT,NNRUN,NSET,NTAFS,SS(100),SSL(100),TNE),TNOW,TT(100)
31      COMMON/PFLAG/MAXPRT,LEVPRT,BPRT,EPRT
32      COMMON/RSCOE/NUMRES(40)
33
34      0
35      EVENT COMMON BLOCKS:
36      COMMON/MENREQ /INITAC(3),RESPOT(3),LIMITAC,ACTIVE(6)
37      COMMON/SCHEDLR/NOACLE(3,2),DELAY(3,2),GRATE(3)
38
39      0
40      USER COMMON BLOCKS:
41      COMMON/UCOM1 /LORSH(24),NCRSH,LLOW(24),NTOW,LEAT(24),NBAT,
42      & PFCUN2,PFCUN3,PCUNEXF,PCUNRON,PBMORP,PHUNCEM,
43      & PATR2(3),PATR3(3),PDAM2(3),PDAM3(3),PDL(5),
44      & DURMIN(3),DURMOD(3),DURMAX(3),PRLCENT(3),PRLWING(3)
45      COMMON/UCOME /SYS(6,4),B*STOL(6),MTBF(6),ALP(6),BET(6),XBATREF(5),
46      & ERUNMIN,ERUNMAX
47      COMMON/UCOM7 /NOCEVT(3),NO*ING(3),CFCENT,CPWING,CPINTA,
48      & CDRATE,CNDMAX,PERLEFT(3),REFRAT(3),UPTIME,DNTIME,
49      & DARMNR(3),DARMHUG(3),DARMRUN(3),DARMEXF(3),
50      & DARMNR(3),DARMHUG(3),DARMGUN(3),DARMGUN(3)
51
52      0
53      LOGICAL ACTIVE
54      REAL MTBF
55
56      0

```

54 C

55 C ESTABLISH FRAC FOR THE THREE DAYS OF THE SIMULATION.

56 C

57 C SORTIE RATES ARE:

58 C DATA SRATE/3.0,2.0,1.5/

59 C

60 C NUMBER OF MISSIONS PER GAGGLE ON EACH OF TWO GAGGLES TO AREA 3

61 C ON EACH OF THE THREE DAYS.

62 C DAY: 1 2 3

63 C GAGGLE 1:

64 C DATA NGAGLE/ 8, 0, 0,

65 C GAGGLE 2:

66 C 3, 0, 0/

67 C

68 C DELAY PERIOD AFTER LAUNCHING EACH OF THE GAGGLES:

69 C DAY 1 2 3

70 C GAGGLE 1:

71 C DATA DELAY/20.0,20.0,20.0,

72 C GAGGLE 2:

73 C 20.0,20.0,20.0/

74 C

75 C DESIRED PERCENTAGE OF SORTIES TO EACH AREA.

76 C

77 C AREA: 1 2 3

78 C DATA REQPC/0.50,0.30,0.20/

79 C

80 C

81 C INITIAL NUMBER OF A/C TO BE CONFIGURED FOR EACH AREA.

82 C THE SUM MUST EQUAL TOTAL A/C MINUS NUMBER ON GRA.

83 C

84 C A/C CONFIGURED FOR AREA: 1 2 3

85 C DATA INITAC/ 0,18,60/

86 C

87 C

88 C

89 C

```

90      C      NUMBER OF CENTER LINE AND WING TANKS FOR EACH CONFIGURATION
91      C      ARE ESTABLISHED FOR EACH AREA.
92      C      CONFIGURATION      1      2      3
93      C      CENTER LINE:
94      C      DATA NCENT/ 1, 1, 1/
95      C      WING:
96      C      DATA NROWING/ 0, 2, 2/
97      C
98      C      LOADING AND UNLOADING TIMES OF EXTERNAL TANKS:
99      C      DATA UPTIME,DNTIME/ 15.0,10.0/
100     C
101     C
102     C      MISSION DURATION TIMES (SORTIE LENGTH AVERAGE)
103     C      BY AREA      :      1      2      3
104     C      DATA DURMIN/ 45.0,70.0,80.0/
105     C      DATA DURMOD/ 55.0,80.0,90.0/
106     C      DATA DURMAX/ 70.0,90.0,100.0/
107     C
108     C
109     C      PROBABILITIES USED TO DETERMINE THE STATUS OF THE
110     C      A/C DURING THE MISSION.
111     C
112     C
113     C      A/C ATTRITION PROBABILITIES:
114     C      ATTRITION AREA 1      2      3
115     C      IN 2-SHIP:
116     C      DATA PATTR2/ 0.05,0.06,0.07/
117     C      IN 3-SHIP:
118     C      DATA PATTR3/ 0.04,0.05,0.06/
119     C
120     C
121     C      TANK JETTISON PROBABILITIES BY AREA:      1      2      3
122     C      CENTER LINE TANKS:
123     C      DATA PRCENT/0.40,0.50,0.60/
124     C      WING TANKS:
125     C      DATA PRLWING/1.00,1.00,1.00/
126     C
127     C
128     C
129     C      MEAN TIME BETWEEN FAILURE OF SIX SYSTEMS:
130     C      DATA MTBF/3400.0,640.0,900.0,420.0,6000.0,1200.0/
131     C      ALPHA FOR THE BETA DISTRIBUTION:
132     C      DATA ALP/5.0,4.0,4.0,3.0,5.0,4.0/
133     C      BETA FOR THE BETA DISTRIBUTION:
134     C      DATA BET/1.5,2.0,2.0,1.5,1.5,2.0/
135     C
136     C
137     C      SPECIFY IF A SQUADRON IS ACTIVE OR NOT FOR THE SIMULATION.
138     C      ACTIVE(1) = .TRUE.
139     C      ACTIVE(2) = .TRUE.

```

```

140             ACTIVE(3) = .TRUE.
141             ACTIVE(4) = .TRUE.
142             ACTIVE(5) = .TRUE.
143             ACTIVE(6) = .TRUE.
144             C
145             C SPECIFY NUMBER OF A/C REQUIRED FOR A SQUADRON TO BE CONSIDERED
146             C OPERATIONAL. USED TO DETERMINE IF A SQUADRON REQUIRES RESUPPLY.
147             C LIMITAC = 12
148             C
149             C INITIAL PERCENT OF A/C OPERATIONAL:
150             C XX(64) = .98
151             C
152             C NUMBER OF PILOTS IN EACH SQUADRON:
153             C XX(58) = 22.0
154             C
155             C NUMBER OF AIRCRAFT IN EACH SQUADRON:
156             C XX(57) = 16.0
157             C
158             C NUMBER OF PILOTS ON GRA ALERT:
159             C XX(61) = 3
160             C
161             C NUMBER OF PILOTS GRA QUALIFIED (INCLUDE THOSE ON ALERT):
162             C XX(62) = 9
163             C
164             C NUMBER OF PILOTS FLIGHT LEAD QUALIFIED (INCLUDE THOSE ON
165             C ALERT AND THOSE GRA QUALIFIED, BUT DO NOT COUNT TWICE):
166             C XX(63) = 14
167             C
168             C INITIAL POL SUPPLY:
169             C XX(60) = 1000000.0

```

```

170      C
171      C   DETERMINE THE NUMBER OF RESOURCES FOR EACH OF THE FOUR
172      C   WING SHOPS:
173      C
174      C   NUMRES(1) = 2
175      C   NUMRES(2) = 2
176      C   NUMRES(3) = 2
177      C   NUMRES(4) = 2
178      C
179      C
180      C   INITIALIZE THE NUMBER OF RESOURCES FOR EACH OF THE
181      C   SIX MMT UNITS:
182      C
183      C   NUMRES(5) = 2
184      C   NUMRES(6) = 2
185      C   NUMRES(7) = 2
186      C   NUMRES(8) = 2
187      C   NUMRES(9) = 2
188      C   NUMRES(10) = 2
189      C
190      C
191      C   ESTABLISH THE NUMBER OF RESOURCES FOR EACH OF THE FOUR
192      C   FOUR SHOPS IN EACH OF THE SIX SQUADRONS:
193      C
194      C   SQUADRON 1 -
195      C   NUMRES(12) = 4
196      C   NUMRES(13) = 4
197      C   NUMRES(14) = 4
198      C   NUMRES(15) = 4
199      C
200      C   SQUADRON 2 -
201      C   NUMRES(16) = 4
202      C   NUMRES(17) = 4
203      C   NUMRES(18) = 4
204      C   NUMRES(19) = 4
205      C
206      C   SQUADRON 3 -
207      C   NUMRES(20) = 4
208      C   NUMRES(21) = 4
209      C   NUMRES(22) = 4
210      C   NUMRES(23) = 4
211      C
212      C   SQUADRON 4 -
213      C   NUMRES(24) = 4
214      C   NUMRES(25) = 4
215      C   NUMRES(26) = 4
216      C   NUMRES(27) = 4
217      C
218      C   SQUADRON 5 -
219      C   NUMRES(28) = 4

```

```

220          NUMRES(29) = 4
221          NUMRES(30) = 4
222          NUMRES(31) = 4
223          C
224          C SQUADRON 6 -
225          NUMRES(32) = 4
226          NUMRES(33) = 4
227          NUMRES(34) = 4
228          NUMRES(35) = 4
229          C
230          C
231          C INITIAL NUMBER OF MX TEAMS:
232          NUMRES(36) = 78
233          C
234          C INITIAL NUMBER OF REARMING CREWS:
235          NUMRES(36) = 18
236          C
237          C INITIAL NUMBER OF FUEL TRUCKS:
238          NUMRES(37) = 40
239          C
240          C INITIAL NUMBER OF DEARMING CREWS:
241          NUMRES(38) = 6
242          C
243          C NUMBER OF RUNWAYS:
244          NUMRES(39) = 1
245          C
246          C NUMBER OF HOTSPOTS:
247          NUMRES(40) = 4
248          C
249          C
250          C
251          C
252          C
253          C SWITCH TO CONTROL TRACING PRINT STATEMENTS
254          C 0 - NONE
255          C 1 - JUNK A/C FILE
256          C 2 - MAJOR EVENTS BEING CALLED
257          C 3 - DETAILS OF MAJOR EVENTS
258          C 4 - ALL PRINTS, EXCEPT FUNCTION USERF AND SUBR EVENT
259          C 5 - ALL PRINTS, EXCEPT FUNCTION USERF
260          C 6 - ALL PRINTS
261          C
262          C LEVPRT = 1
263          C
264          C NOW WHEN TO START AND STOP PRINTING STATEMENTS:
265          C EPRT = -1.0
266          C EPRT = -1.0
267          C
268          C STATE NUMBER OF FILES TO BE DUMPED:
269          C MAXPRT = 0

```

270	C	
271		RETURN
272		END
273	C	
274	C	
275	C	

```

276          SUBROUTINE INTLC
277          COMMON/SCOM1/ ATRIB(100),DD(100),BDL(100),DTNOW,II,MFA,MSTOP,NCLNR
278          & ,NCRDR,NPRNT,NNRUN,NNSEI,NTAPE,SS(100),SSL(100),TNEXT,TNOW,XX(100)
279          COMMON/PFLAG/MAXPRT,LEVPRT,EPRT,EPRT
280          COMMON/RSDRCE/NUMRES(40)
281
282          C
283          C
284          EVENT COMMON BLOCKS:
285          COMMON/STATS /MAXCONF(6),NACTYPE(6,3),NCSQ(300),MSNRQA2,MSNFW(3)
286          COMMON/MSNREQ /INITAC(3),REQPT(3),LIMITAC,ACTIVE(6)
287          COMMON/SCHEDLR/NGAGLE(3,2),DELAY(3,2),SRATE(3)
288          COMMON/CLOCK /INTDARK,DUSK(3),DAYLIGHT(3),MAJEVNT(13,2)
289
290          C
291          C
292          USER COMMON BLOCKS:
293          COMMON/UCOM1 /LCRSH(24),NCRSH,LTOW(24),NTOW,LBAT(24),NBAT,
294          & FRCJN2,PERGUN3,PGUNEXP,PGUNRUN,PSMDROP,PHUNGBM,
295          & PATTR2(3),PATTR3(3),PDAM2(3),PDAM3(3),PDL(5),
296          & DURMIN(3),DURMOD(3),DURMAX(3),PRLCENT(3),PRLWING(3)
297          COMMON/UCOM2 /KPAK(6,50,2),NTYPE(6,3)
298          COMMON/UCOM3 /SYS(6,4),SYSTOL(6),MTBF(6),ALP(6),BET(6),NBATREP(5),
299          & ERUNMIN,ERUNMAX
300          COMMON/UCOM4 /DIST(13,13),TOW(3),TAXI(3),CREW(3)
301          COMMON/UCOM5 /NGCENT(3),NGWING(3),OPCENT,OPWING,OPINTR,
302          & GDRATE,GNDMAX,PERLEFT(3),REFRAT(3),OPTIME,DNTIME,
303          & DARMNR(3),DARMJG(3),DARMUN(3),DARMEXP(3),
304          & RARMNR(3),RARMJG(3),RARMUN(3),RARMEXP(3)
305          COMMON/UCOM6 /MIN1(5),MODE1(5),MAX1(5),MIN2(5),MODE2(5),MAX2(5),
306          & MIN3(5),MODE3(5),MAX3(5),MIN4(5),MODE4(5),MAX4(5),
307          & MIN5(5),MODE5(5),MAX5(5),MIN6(5),MODE6(5),MAX6(5),
308          & WSH1INT(3),WSH3INT(3)
309          COMMON/UCOM9 /MMTMIN(6,2),MMTMOD(6,2),MMTMAX(6,2)
310          COMMON/UCOM10/MINI(5),MODE1(5),MAX1(5)
311
312          C
313          RE4. MINI,MODE1,MAX1,MIN2,MODE2,MAX2,MIN3,MODE3,MAX3,
314          & MIN4,MODE4,MAX4,MIN5,MODE5,MAX5,MIN6,MODE6,MAX6,
315          & MINI,MODE1,MAX1,MMTMIN,MMTMOD,MMTMAX,MTBF,MAJEVNT
316
317          C
318          LOGICAL INTDARK,ACTIVE
319
320          C
321          C
322          C
323          C
324          C
325          C
326          C
327          C
328          C
329          C
330          C
331          C
332          C
333          C
334          C
335          C
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326      C      CRASHED DUE TO MX FAILURES AND BATTLE DAMAGE
327      C      NBAT - LENGTH OF LIST LEAT.
328      C
329      C      NTYPE - NUMBER OF EACH TYPE OF PARKING SPACE FOR EACH 30DN.
330      C
331      C      SYS - IF SYSTEM FAILS, CUMULATIVE PROBABILITIES FOR EACH
332      C      SYSTEM USED TO DETERMINE LEVEL OF FAILURE (LEVEL 5
333      C      BEING 1.00).
334      C      SYSTOL - TOLERANCE WHICH ALLOWS MX FAILURES TO OCCUR IF THE
335      C      SYSTEM IS SCHEDULED TO FAIL WITHIN SYSTOL MINUTES.
336      C      MTBF - MEAN TIME BETWEEN FAILURE
337      C
338      C
339      C      DIST - DISTANCE MATRIX FOR POINT I TO POINT J ON BASE.
340      C      TOW - LOW/MEDIUM/HIGH INPUTS TO TRIANGULAR DISTRIBUTION TO
341      C      DETERMINE A/C TOW RATE.
342      C      TAXI - AS ABOVE, EXCEPT TO DETERMINE A/C TAXI RATE.
343      C      CREW - AS ABOVE, EXCEPT TO DETERMINE CREW RETURN RATE FROM
344      C      VARIOUS AREAS OF THE BASE AFTER GND ABORT OR MX
345      C      FAILURE.
346      C
347      C      GDRATE - POL CONSUMPTION RATE ON THE GROUND.
348      C      CPENT - CAPACITY OF CENTERLINE TANK(S)
349      C      CPWING - CAPACITY OF EXTERNAL WING TANKS
350      C      CPINTR - CAPACITY OF INTERNAL TANK(S).
351      C      GNDMAX - MAXIMUM GROUND OPERATING TIME BEFORE TOPPING OFF TANKS
352      C      UPTIME - TIME TO UPLOAD ONE EXTERNAL TANK.
353      C      DNTIME - TIME TO DOWN-LOAD AN EXTERNAL TANK.
354      C
355      C      END OF GLOSSARY.
356      C
357      C
358      C
359      C
360      C
361      C      SERVICE TIMES FOR SYSTEMS 1 TO 6:
362      C      LEVELS      .   2   3   4   5
363      C
364      C      SYSTEM 1:
365      C      DATA MIN1 /15.0,20.0,25.0,60.0,420.0/
366      C      DATA MODE1/20.0,25.0,45.0,160.0,540.0
367      C      DATA MAX1 /30.0,35.0,60.0,360.0,660.0/
368      C      SYSTEM 2:
369      C      DATA MIN2 /25.0,30.0,120.0,720.0,720.0/
370      C      DATA MODE2/75.0,120.0,100.0,1150.0,1200.0/
371      C      DATA MAX2 /120.0,240.0,300.0,1700.0,1800.0/
372      C      SYSTEM 3:
373      C      DATA MIN3 /40.0,60.0,120.0,360.0,360.0/
374      C      DATA MODE3/75.0,180.0,270.0,800.0,900.0/
375      C      DATA MAX3 /120.0,240.0,360.0,1100.0,1200.0/

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376      C      SYSTEM 4:
377      DATA MIN4 /30.0,60.0,180.0,270.0,420.0/
378      DATA MODE4/45.0,90.0,270.0,600.0,900.0/
379      DATA MAX4 /60.0,120.0,420.0,900.0,1200.0/
380      C      SYSTEM 5:
381      DATA MIN5 /30.0,40.0,60.0,90.0,180.0/
382      DATA MODE5/40.0,60.0,80.0,120.0,300.0/
383      DATA MAX5 /50.0,90.0,100.0,240.0,420.0/
384      C      SYSTEM 6:
385      DATA MIN6 /40.0,60.0,90.0,120.0,150.0/
386      DATA MODE6/50.0,120.0,180.0,180.0,210.0/
387      DATA MAX6 /60.0,180.0,240.0,300.0,360.0/
388      C
389      C
390      C
391      C      WING SHOP SERVICE TIME INCREASE DUE TO BOTH PROBLEMS BEING IN SAME
392      C      SHOP.  ADDED TO MAXIMUM SERVICE TIME OF THE TWO SERVICES AND THE
393      C      RESULT IS USED AS THE OVERALL SERVICE TIME.
394      C      MIN  MODE  MAX
395      DATA WSH1INT/30.0,50.0,60.0/
396      DATA WSH3INT/25.0,35.0,45.0/
397      C
398      C
399      C
400      C
401      C
402      C      MMT SERVICE TIMES:
403      C
404      C      SYSTEMS: 1      2      3      4      5      6
405      C      LEVEL 4 PROBLEM:
406      DATA (MMTMIN(I,1),I=1,6)/70.00,100.0,70.00,70.00,55.0,55.0/
407      DATA (MMTMOD(I,1),I=1,6)/100.0,130.0,120.0,100.0,70.0,70.0/
408      DATA (MMTMAX(I,1),I=1,6)/140.0,180.0,170.0,130.0,85.0,85.0/
409      C
410      C      LEVEL 5 PROBLEM:
411      DATA (MMTMIN(I,2),I=1,6)/100.0,130.0,120.0,130.0,65.00,70.00/
412      DATA (MMTMOD(I,2),I=1,6)/130.0,150.0,180.0,190.0,95.00,90.00/
413      DATA (MMTMAX(I,2),I=1,6)/200.0,220.0,260.0,260.0,130.0,120.0/
414      C
415      C
416      C      INTERFERENCE TIMES ADDED TO SQUADRON SERVICE TIMES DUE
417      C      TO OTHER SHOPS WORKING THE SAME A/C AT THE SAME TIME.
418      C
419      C      NUMBER OF OTHER ACTIVITIES: 1      2      3      4      5
420      DATA MINI /5.0,5.0,10.0,15.0,20.0/
421      DATA MODEI/5.1,5.1,10.1,20.0,25.0/
422      DATA MAXI /5.2,5.2,10.2,25.0,30.0/
423      C
424      C
425      C      SECTION 1. UTILITY.

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426 C
427 C
428 C
429 C
430 C LCRSH, LTOW, AND LBAT ARE CODES WHICH DETERMINE IF THE A/C
431 C SHOULD CRASH, BE TOWED, OR DESTROYED DUE TO A COMBINATION OF
432 C MX FAILURES (WITH LBAT, BATTLE DAMAGE IS ALSO CONSIDERED).
433 C IF EACH SYSTEM HAS A GREATER THAN OR EQUAL LEVEL OF FAILURE
434 C THAN THAT WHICH IS SPECIFIED IN ONE OF THE CODES IN LCRSH,
435 C LTOW, AND LBAT, THEN THE A/C HAS MEET THE CONDITIONS AND IS
436 C CRASHED, TOWED, OR DESTROYED, RESPECTIVELY.
437 C
438 C EACH CODE VECTOR CAN HAVE UP TO 24 DIFFERENT CODED NUMBERS
439 C TO COMPARE TO THE MX FAILURE CODE, ATTRIB(18), TO DETERMINE
440 C THE OUTCOME OF THE A/C (IE CRASH, TOW, OR DESTROYED). THE
441 C NUMBER OF ENCODED NUMBERS FOR EACH VECTOR IS SPECIFIED IN THE
442 C FOLLOWING STATEMENT (THESE NUMBERS ARE FOR THIS PARTICULAR RUN).
443 C DATA NORSH,NTOW,NBAT/6,8,13/
444 C
445 C IF LESS THAN 24 ENCODED NUMBERS ARE USED IN THE VECTORS LCRSH,
446 C LTOW, AND LBAT, USE 999999 FOR THE REST (9999999 FOR LBAT).
447 C
448 C DATA LCRSH/050000,444000,005000,000500,504000,433000,12*999999/
449 C
450 C DATA LTOW /500000,050000,040000,005000,000500,000400,
451 C + 000005,303000,16*999999/
452 C
453 C
454 C FOR LBAT, THE SEVENTH DIGIT REFERS TO BATTLE DAMAGE.
455 C DATA LBAT/050000,444000,040000,005000,004000,034000,
456 C + 000500,030400,500000,504000,002400,433000,
457 C + 420004,11*999999/
458 C
459 C
460 C
461 C
462 C GUN PROBABILITIES:
463 C PROBABILITY OF FIRING A GUN IF IN TWO SHIP OR THREE SHIP:
464 C DATA PERGUN2,PERGUN3/ 0.70,0.70/
465 C
466 C PROBABILITY OF THE GUN EXPLODING:
467 C DATA PGUNEXP/0.01/
468 C
469 C PROBABILITY OF THE GUN RUNNING AWAY:
470 C DATA PGUNRUN/0.02/
471 C
472 C
473 C
474 C BOMB PROBABILITIES:
475 C

476 C PROBABILITY OF DROPPING THE BOMBS:
 477 DATA PDMDROP/1.00/
 478 C
 479 C PROBABILITY OF THE BOMB(S) BEING HUNG:
 480 DATA PHUNGEM/0.05/
 481 C
 482 C
 483 C
 484 C BATTLE DAMAGE PROBABILITIES:
 485 AREA: 1 2 3
 486 C IN 2-SHIP:
 487 DATA PDAM2 / 0.03,0.02,0.04/
 488 C IN 3-SHIP:
 489 DATA PDAMS / 0.02,0.01,0.03/
 490 C
 491 C BATTLE DAMAGE LEVEL PROBABILITIES:
 492 DAMAGE LEVEL: 1 2 3 4 5
 493 DATA PDL/0.60,0.20,0.10,0.06,0.24/
 494 C
 495 C
 496 C
 497 C SECTION 2, PARKING.
 498 C
 499 C
 500 C SPECIFY THE NUMBER OF EACH TYPE OF PARKING SPACE AVAILABLE
 501 (SHELTERED, REVETMENT, DISPERSED) FOR EACH SQUADRON.
 502 SQUADRON: 1 2 3 4 5 6
 503 C SHELTERED:
 504 DATA NTYPE/ 7, 7, 7, 7, 7, 7,
 505 C REVETMENT:
 506 0 9, 9, 9, 0, 0, 0,
 507 C DISPERSED:
 508 0 34, 34, 34, 43, 43, 43/
 509 C
 510 C
 511 C
 512 C SECTION 5, ALTER CODE.
 513 C
 514 C
 515 C CUMULATIVE PROBABILITY OF FAILURE LEVEL FOR THE SIX DIFFERENT
 516 MAINTENANCE SYSTEMS.
 517 SYSTEMS: 1 2 3 4 5 6
 518 C LEVEL 1:
 519 DATA SYS/0.10,0.10,0.05,0.05,0.10,0.05,
 520 C LEVEL 2:
 521 0 0.20,0.50,0.35,0.85,0.35,0.50,
 522 C LEVEL 3:
 523 0 0.50,0.80,0.50,0.90,0.65,0.75,
 524 C LEVEL 4:
 525 0 0.80,0.90,0.65,0.95,0.90,0.90/

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526      C      SINCE LEVEL FIVE IS 1.00, IT DOES NOT HAVE TO BE SPECIFIED.
527      C
528      C
529      C      TOLERANCE ALLOWED BEFORE A SYSTEM IS GOING TO BREAK AND
530      C      TNDW. USED IN PREFLIGHT TO CHECK IF A SYSTEM IS ABOUT
531      C      TO FAIL.
532      C      SYSTEM:      1  2  3  4  5  6
533      C      DATA SYSTOL/5.0;5.0;5.0;5.0;5.0;5.0/
534      C
535      C
536      C
537      C      MX FAILURE CODES THAT ARE EQUIVALENT TO THE FIVE BATTLE
538      C      DAMAGE LEVELS. AT MX, THE MX FAILURE CODE, ATRIB(16), AND
539      C      THE EQUIVALENT BATTLE DAMAGE CODE GIVEN BELOW ARE "MASHED"
540      C      TOGETHER TO FORM THE NEW MX FAILURE CODE TO ESTABLISH
541      C      THE LEVEL OF REPAIR TO BE PERFORMED BY MX.
542      C      999999 INDICATES THAT THE A/C IS NOT REPAIRABLE.
543      C
544      C      DATA NBATREP/ 122211;233021;344021;999999;999999/
545      C
546      C
547      C
548      C      MINIMUM AND MAXIMUM VALUES OF UNIFORM DISTRIBUTION
549      C      USED TO INITIALIZE THE A/C ENGINE RUNNING TIME.
550      C      DATA ERUNMIN;ERUNMAX/30.0;12000.0/
551      C
552      C
553      C
554      C      SECTION 6: TRAVEL TIME.
555      C
556      C      THE FOLLOWING MATRIX DEFINES THE DISTANCES BETWEEN THE THIRTEEN
557      C      ENCODED LOCATIONS ON THE FIELD. IF 0.0 IS ENTERED, THE DISTANCE
558      C      BETWEEN THOSE TWO POINTS IS NOT IMPORTANT TO THE SIMULATION.
559      C      THE FOLLOWING IS A LIST OF THE ENCODED LOCATIONS:
560      C      1  SQUADRON AREA 1
561      C      2  SQUADRON AREA 2
562      C      3  SQUADRON AREA 3
563      C      4  SQUADRON AREA 4
564      C      5  SQUADRON AREA 5
565      C      6  SQUADRON AREA 6
566      C      7  ARMING AREA
567      C      8  APPROACH END OF THE RUNWAY
568      C      9  WING AREA
569      C      10 DEARMING AREA
570      C      11 HOTSPOT AREA
571      C      12 DEPARTURE END OF THE RUNWAY
572      C      13 NOT DEFINED
573      C
574      C      DIST. MATRIX: 1  2  3  4  5  6  7  8  9  10 11 12 13
575      C      DATA DIST /0.0;0.0;0.0;0.0;0.0;0.0;0.5;1.0;0.5;2.0;0.7;2.3;0.0;

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576 0.0;2.0;0.0;0.0;0.0;0.0;1.3;2.0;0.5;0.0;0.7;1.2;0.0;
 577 0.0;0.0;0.0;0.0;0.0;0.0;1.7;2.0;0.0;0.0;1.1;0.0;0.0;
 578 0.0;0.0;0.0;0.0;0.0;0.0;0.0;0.0;0.5;1.4;1.1;1.4;0.0;0.0;
 579 0.0;0.0;0.0;0.0;0.0;0.0;1.0;1.0;1.0;1.9;0.5;1.9;0.0;0.0;
 580 0.0;0.0;0.0;0.0;0.0;0.0;1.0;1.0;1.5;2.4;0.0;2.4;0.0;0.0;
 581 0.5;1.0;1.7;0.0;1.0;1.0;0.0;0.0;2.4;1.0;2.0;0.0;0.0;0.0;
 582 1.0;2.0;2.0;0.5;1.0;1.5;2.4;0.0;1.0;2.4;1.0;2.4;0.0;0.0;
 583 0.5;0.5;0.0;1.4;1.5;2.4;1.0;1.0;0.0;1.2;0.5;1.2;0.0;0.0;
 584 2.0;0.0;0.0;0.0;0.0;0.0;0.0;0.0;2.0;2.4;1.2;0.0;1.0;0.0;0.0;
 585 0.7;0.7;1.1;1.4;1.9;2.4;0.0;1.0;0.5;1.0;0.0;1.0;0.0;0.0;
 586 1.0;1.2;0.0;0.0;0.0;0.0;0.0;0.0;2.0;2.4;1.2;0.0;1.0;0.0;0.0;
 587 0.0;0.0;0.0;0.0;0.0;0.0;0.0;0.0;0.0;0.0;0.0;0.0;0.0;0.0/
 588
 589
 590 LOW, MEDIUM, AND HIGH RATES OF TRAVEL (SPEED) THAT AN A/C CAN
 591 TAXI, THAT AN A/C CAN BE TOWED, AND THAT A CREW CAN BE BUSIED ON
 592 AN AIRFIELD.
 593 DATA TOW /1.134;1.268;1.402/
 594 DATA TAXI/1.402;1.671;1.073/
 595 DATA CREW/1.671;1.909;1.073/
 596
 597
 598
 599 SECTION 7: TURNAROUND
 600
 601
 602 FUEL CAPACITY OF CENTER LINE TANK, WING TANK, AND INTERNAL TANKS:
 603 DATA CPOCENT;CPWING;CPINTR;600.0;800.0;500.0;
 604
 605 FUEL CONSUMPTION RATE ON THE GROUND:
 606 DATA CDRATE/40.0/
 607
 608
 609 MAX GROUND OPERATING TIME BEFORE REQUIRING REFUELING:
 610 DATA CNDMAX/45.0/
 611
 612 PERCENT OF INTERNAL FUEL LEFT AFTER A MISSION.
 613 AREA : 1 2 3
 614 DATA PERLEFT/10;15;20/
 615
 616 REFUELING RATE: MIN MOD MAX
 617 DATA REFRAT/40.0;50.0;60.0/
 618
 619
 620 DEARMING TIMES:
 621
 622 NORMAL:
 623 DATA DARMNOR/ 1.0;2.0;3.0/
 624 HUNG ORD.:
 625 DATA DARMHUC/ 4.0;6.0;10.0/
 626 RUNWAY GUN:
 627 DATA DARMRUN/ 5.0;9.0;15.0/

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606      C      EXPLODED GUN:
627          DATA DARMEXP/ 5.0,2.0,20.0/
628      C
629      C
630      C      REARMING TIMES:
631          MIN MOD MAX
632      C      NO ORDNANCE:
633          DATA RARMNOR/ 12.0,15.0,24.0/
634      C      UNLOADED GUN:
635          DATA RARMGUN/ 5.0,10.0,15.0/
636      C      HUNG ORDS:
637          DATA RARMHUG/ 5.0,10.0,15.0/
638      C      BAD GUN:
639          DATA RARMBGN/ 13.0,120.0,180.0/
640      C
641      C
642      C
643      C
644      C      ESTABLISH, RELATIVE TO NOW, WHAT TIME IT BECOMES DAY LIGHT,
645      C      WHAT TIME IT GETS DARK, AND WHETHER IT IS INITIALLY DARK (INTDARK)
646          DAY 1 2 3
647          DATA DAYLGT/ 10.0,1455.0,2095.0/
648          DATA DUSK/ 1975.0,1415.0,2055.0/
649      C
650      C      INTDARK = .TRUE.
651      C
652      C
653      C      MAJEVNT IS THE VECTOR THAT DRIVES THE MASTER CLOCK. IT DETERMINES
654      C      WHEN KEY ACTIVITIES ARE TO BEGIN. THE KEY ACTIVITIES ARE:
655          0  TERMINATE THE RUN
656          1  START SCHEDULING FLIGHTS
657          2  BEGIN NIGHT PARKING OF A/C
658          3  PERFORM QRA CHANGEOVER
659          4  DETERMINE RESUPPLY REQUIREMENT AND RECONFIGURE FOR NEXT DAY
660          99 NOTHING
661      C      THE FIRST VALUE OF EACH PAIR IS THE TIME RELATIVE TO THE BEGINNING
662      C      OF THE SIMULATION THAT THE ACTIVITY SPECIFIED BY THE SECOND VALUE
663      C      OF THE PAIR IS TO BE INITIATED (IE. THE FIRST PAIR OF NUMBERS IS
664      C      10.0 AND 4.0). A MAXIMUM OF THIRTEEN ACTIVITIES CAN BE SCHEDULED.
665      C
666      C      DO 10 I = 1,10
667          MAJEVNT(I,1) = 999999.0
668          MAJEVNT(I,2) = 99.0
669      10  CONTINUE
670      C
671          MAJEVNT(1,1) = 10.0
672          MAJEVNT(1,2) = 4.0
673          MAJEVNT(2,1) = 16.0
674          MAJEVNT(2,2) = 1.0
675          MAJEVNT(3,1) = 976.0

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676             MAJEVNT(5,2) = 3.0
677             MAJEVNT(4,1) = 580.0
678             MAJEVNT(4,2) = 2.0
679             C
680             MAJEVNT(5,1) = 1450.0
681             MAJEVNT(5,2) = 4.0
682             MAJEVNT(6,1) = 1456.0
683             MAJEVNT(6,2) = 1.0
684             MAJEVNT(7,1) = 2416.0
685             MAJEVNT(7,2) = 3.0
686             MAJEVNT(8,1) = 2420.0
687             MAJEVNT(8,2) = 2.0
688             C
689             MAJEVNT(9,1) = 2890.0
690             MAJEVNT(9,2) = 4.0
691             MAJEVNT(10,1) = 2896.0
692             MAJEVNT(10,2) = 1.0
693             MAJEVNT(11,1) = 3856.0
694             MAJEVNT(11,2) = 3.0
695             MAJEVNT(12,1) = 3860.0
696             MAJEVNT(12,2) = 2.0
697             C
698             MAJEVNT(13,1) = 4319.0
699             MAJEVNT(13,2) = 0.0
700             C
701             C
702             C      ZERO OUT THE GLOBAL VARIABLES.
703             DO 100 I = 1,100
704                 XX(I) = 0.0
705             100 CONTINUE
706             C
707             C      CALL THE USER INITIALIZATION ROUTINE AND SET THE RESOURCE LEVELS
708             C
709             CALL USERI
710             C
711             DO 200 I = 1,40
712                 CALL ALTER(I,NUMRES(I))
713             200 CONTINUE
714             C
715             C
716             C      PROBABILITY OF A/C DELAY AT PILOT PREFLIGHT:
717                 XX(65) = .25
718             C
719             C      PROBABILITY OF A/C DELAY AT START ENGINE:
720                 XX(66) = .15
721             C
722             C      PROBABILITY OF A/C DELAY AT TAXI, MARSHALL, ARM:
723                 XX(67) = .10
724             C
725             C      PROBABILITY OF FLIGHT DELAY AT TAKE-OFF:

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726          XX(68) = .03
727      C
728      C   PROBABILITY OF A/C DELAY AT REJOIN:
729          XX(69) = .10
730      C
731      C
732      C   ZERO OUT PARKING AREA.
733      C
734          DO 300 I = 1,6
735          DO 300 J = 1,50
736          DO 300 K = 1,2
737              NPARK(I,J,K) = 0
738      300 CONTINUE
739      C
740      C   MARK QRA PARKING SPACES.
741          DO 310 I = 1,6
742          DO 310 J = 1,IFIX(XX(61))
743              NPARK(I,J,2) = 1000000
744      310 CONTINUE
745      C
746      C
747          DO 670 I = 1,6
748              IF(ACTIVE(I))XX(49 + I) = 1.0
749      670 CONTINUE
750      C
751      C
752      C   SPECIFY INITIAL CONFIGURATION OF RESUPPLY A/C:
753          XX(59) = 2
754      C
755          DO 500 I = 1,300
756              NCSQ(I) = 999999
757      500 CONTINUE
758      C
759          RETURN
760          END
761      C
762      C
763      C
764      C
765      C
766      C
767      C
768      C

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769          SUBROUTINE QTPUT
770          COMMON/SCOM1/ATTRIB(100),DB(100),DDL(100),DTNOW,II,MFA,MSTOP,NCLNR
771          &INCRDR,NPRT,NNRUN,NNSET,NTAPE,SS(100),SSL(100),TNEXT,TNOW,XX(100)
772          COMMON/PFLAG/MAXPRT,LEVPRT,BPRT,EPRT
773          C
774          C   SECTION TO PRINT A FILE DUMP AT THE END OF A RUN.
775          C
776          IF (MAXPRT.GT.99) MAXPRT = 99
777          IF (MAXPRT.GT.0) THEN
778              DO 100 I = 1,MAXPRT
779                  CALL PRNTE(I)
780          100      CONTINUE
781          ENDIF
782          C
783          IF (LEVPRT.GE.2.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
784              PRINT*,'***  NUMBER OF A/C FAILING ',XX(100)
785          ENDIF
786          C
787          PRINT*,'-----'
788          PRINT*
789          PRINT*,'*RESPONSE VARIABLE*'
790          PRINT*,XX(94)
791          PRINT*
792          PRINT*,'-----'
793          RETURN
794          E
795          C
796          C
797          C
798          C
799          C
800          C
801          C
802          C
803          C

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804      FUNCTION USERF (IFW)
805      COMMON/SCOM1/ ATRIB(100),DD(100),DDL(100),DTNOW,II,MFA,MSTOP,NCLNR
806      &NCRDR,NPRT,NNRUN,NNSET,NTAPE,SS(100),SSL(100),TEXT,TNOW,XX(100)
807      COMMON/PFLAG/MAXPRT,LEVPRT,EPRT,EPRT
808      COMMON/RSORCE/NUMRES(40)
809      COMMON/STATS/MAXCONF(6),NACTYPE(6,3),NCSQ(300),MSNAQZ,MNFWL(3)
810      C
811      C
812      C      ALL THE USER FUNCTIONS (USERF) ARE DIVIDED INTO THIRTEEN SECTIONS:
813      C
814      C      SECTION      SECTION      ENTRY      FUNCTION NUMBER      NUMBER
815      C      NUMBER      NAME      ADDRESS      RANGE (IFW)      IN USE
816      C      -----
817      C      1      UTILITY      1000      11 TO 19      9
818      C      2      PARKING      2000      21 TO 29      8
819      C      3      EXAMINE CODE      3000      31 TO 39      9
820      C      4      RESET CODE      4000      41 TO 49      7
821      C      5      ALTER CODE      5000      51 TO 59      8
822      C      6      TRAVEL TIMES      6000      61 TO 69      7
823      C      7      TURNAROUND      7000      71 TO 79      8
824      C      8      WING SERVICE      8000      81 TO 89      4
825      C      9      MMT SERVICE      9000      91 TO 99      6
826      C      10     SQDN SERVICE      10000     101 TO 109     4
827      C      11     MAINTENANCE      11000     111 TO 119     8
828      C      12     STATISTICS      12000     121 TO 129     5
829      C      13     MTBF DIST.      13000     131 TO 139     7
830      C
831      C
832      C      EACH SECTION HAS ITS OWN COMMON BLOCK (IF REQ'D) AND DATA STATE-
833      C      MENTS FOR USER PROVIDED INFORMATION. THE COMMON BLOCKS FOLLOW:
834      C
835      C      USER PROVIDED COMMON BLOCKS.
836      C
837      C      SECTION 1, UTILITY COMMON BLOCK:
838      C      COMMON/UCOM1/LDRSH(24),NFBH,LTOW(24),NTOW,LBAT(24),NBAT,
839      C      &FERGUN2,FERGUN3,FGUNEXP,FGUNARN,PEMDROP,PHUNGBM,
840      C      &PATTR2(3),PATTR3(3),PDAM2(3),PDAM3(3),PDL(5),
841      C      &DURMIN(3),DURMOD(3),DURMAX(3),PRLCENT(3),PRLWING(3)
842      C
843      C      SECTION 2, PARKING COMMON BLOCK:
844      C      COMMON/UCOM2/NPARK(6,50,2),NTYPE(6,3)
845      C
846      C      SECTION 5, ALTER CODE COMMON BLOCK:
847      C      COMMON/UCOM5/SYS(6,4),SYSTOL(6),MTBF(6),ALP(6),BET(6),NBATREP(5),
848      C      &ERUNMIN,ERUNMAX
849      C
850      C      SECTION 6, TRAVEL TIME COMMON BLOCK:
851      C      COMMON/UCOM6/DIST(13,13),TOW(3),TAXI(3),CREW(3)
852      C
853      C      SECTION 7, TURNAROUND COMMON BLOCK:

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854      COMMON/UCOM7/NOCENT(3),NOWING(3),CPCENT,CPWING,CPINTR,
855      &      GDRATE,GNOMAX,PERLEFT(3),REFRAT(3),UPTIME,DNTIME,
856      &      DARMNOR(3),DARMHUG(3),DARMRUN(3),DARMEXP(3),
857      &      RARMNOR(3),RARMHUG(3),RARMGUN(3),RARMBCN(3)
858      C
859      C      SECTION 8, WING SERVICE
860      COMMON/UCOM8/MIN1(5),MODE1(5),MAX1(5),MIN2(5),MODE2(5),MAX2(5),
861      &      MIN3(5),MODE3(5),MAX3(5),MIN4(5),MODE4(5),MAX4(5),
862      &      MIN5(5),MODE5(5),MAX5(5),MIN6(5),MODE6(5),MAX6(5),
863      &      WSH1INT(3),WSH3INT(3)
864      C
865      C      SECTION 9, MMT SERVICE
866      COMMON/UCOM9/MMTMIN(6,2),MMTMOD(6,2),MMTMAX(6,2)
867      C
868      C      SECTION 10, SQUADRON SERVICE
869      COMMON/UCOM10/MIN1(5),MODE1(5),MAX1(5)
870      C
871      C      THE FOLLOWING ARE VARIABLE TYPE DECLARATIONS
872      C
873      REAL MIN1,MODE1,MAX1,MIN2,MODE2,MAX2,MIN3,MODE3,MAX3,
874      &      MIN4,MODE4,MAX4,MIN5,MODE5,MAX5,MIN6,MODE6,MAX6,
875      &      MIN1,MODE1,MAX1,MMTMIN,MMTMOD,MMTMAX,MTEF
876      INTEGER MXCODE(7),LEV(6)
877      LOGICAL NNTOW, NNCRSH, NNBAT
878      C
879      C
880      C
881      C
882      C
883      IF (LEVPT.GE.6.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
884          PRINT*,'FUNCTION ',IFN,' CALLED, TIME ',TNOW,', A/C ',ATRIB(2)
885      ENDIF
886      C
887      C      BRANCH TO THE SECTION OF THE USER FUNCTION DESIRED.
888      I = IFN/10
889      GOTO(1000,2000,3000,4000,5000,6000,7000,8000,9000,10000,
890      +      11000,12000,13000),I
891      C
892      C
893      C
894      C
895      C
896      C
897      C

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898      C      *****
899      C      SECTION 1, UTILITY -- USERF(11) TO USERF(19)
900      C      *****
901      1000 CONTINUE
902      C
903      C      GLOSSARY OF VARIABLES USED IN THIS SECTION
904      C      COMMON/UCOM1/LORSH(24),NNCRSH,LTOW(24),NTOW,LBAT(24),NBAT,
905      C      &      PFCUN2,PFCUN3,PCUNEXP,PCUNRUN,PBMDROP,PHUNGB,
906      C      &      PATR2(3),PATR3(3),PDAM2(5),PDAM3(3),PDL(5),
907      C      &      DURMIN(3),DURMOD(3),DURMAX(3),PRLCENT(3),PRLWING(3)
908      C      INTEGER MXCODE(7)
909      C      LOGICAL, NNTOW,NNCRSH,NNBAT
910      C
911      C      INTEGER VALUE VARIABLES:
912      C      LORSH - ENCODE LEVELS WHICH CAUSE THE A/C TO CRASH.
913      C      NNCRSH - NUMBER OF ENCODED LEVELS IN LORSH.
914      C      LTOW - ENCODED MX LEVELS WHICH CAUSE AN A/C TO BE TOWED.
915      C      NTOW - NUMBER OF ENCODED LEVELS IN LTOW.
916      C      LBAT - ENCODED MX & BATTLE DAMAGE LEVELS THAT CAUSE THE A/C
917      C      TO CRASH.
918      C      NBAT - NUMBER OF ENCODED LEVELS IN LBAT.
919      C      NFUNC - FUNCTION BEING ACCESSED.
920      C      MXCODE- TEMPORARY STORAGE TO DECODE THE MX FAILURE CODE.
921      C      NDIV - TEMPORARY DIVISOR, USED TO DECODE VALUES.
922      C      NCODE - TEMPORARY VALUE OF NUMBER BEING DECODED.
923      C      NVAL - INDIVIDUAL DIGIT OF ENCODED NUMBER.
924      C
925      C
926      C      LOGICAL VALUE VARIABLES:
927      C      NNTOW - FLAG USED IN DETERMINING IF A/C REQUIRES TOWING.
928      C      NNCRSH- FLAG USED IN DETERMINING IF A/C CRASHED IN FLIGHT.
929      C      NNBAT - FLAG USED IN DETERMINING IF A/C CRASHED AFTER OR
930      C      DURING A MISSION.
931      C
932      C      END OF GLOSSARY.
933      C
934      C
935      C      DETERMINE WHICH USER FUNCTION IS BEING ACCESSED.
936      C      NFUNC = MOD(IFN,10)
937      C      GO TO(1100,1200,1300,1400,1500,1600,1700,1800,1900),NFUNC
938      C
939      C
940      C
941      C      FUNCTION USERF(11)
942      C      THIS ROUTINE ASSIGNS THE CORRECT STATUS TO EACH PILOT BEING
943      C      ENTERED INTO THE SYSTEM. GLOBAL VARIABLES XX(61),XX(62),XX(63),
944      C      AND XX(71) ARE USED TO GENERATE THE STATUS, THEY ARE:
945      C      XX(61) - NUMBER OF PILOTS ON QRA ALERT
946      C      XX(62) - TOTAL NUMBER OF PILOTS QRA QUALIFIED (INCLUDING
947      C      THOSE ON ALERT).

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948      C      XX(63) - TOTAL NUMBER FLIGHT LEAD QUALIFIED PILOTS (INCLUDING
949      C      ALL PILOTS THAT ARE GRA QUALIFIED), AND
950      C      XX(71) - COUNTER OF PILOTS BEING GENERATED.
951      C      XX(50) - EQUALS 1 IF RESUPPLY AIRCRAFT.
952      C      XX(57) - NUMBER OF ORIGINAL A/C PER SQUADRON.
953      C      XX(58) - NUMBER OF ORIGINAL PILOTS PER SQUADRON.
954      C
955      1.00 IF(TNOW.LT.0.1)THEN
956      C      ASSIGN STATUS OF PILOTS INITIALLY ON STATION
957      C      USERF = 0.0
958      C      IF(XX(71).LE.XX(63)) USERF = 1.0
959      C      IF(XX(71).LE.XX(62)) USERF = 2.0
960      C      IF(XX(71).LE.XX(61)) USERF = 3.0
961      C      ELSE
962      C      ASSIGN STATUS OF RESUPPLY PILOTS
963      C      ASSUME SAME RATIO OF PILOTS FOR EACH
964      C      CATEGORY AS ORIGINALLY ON STATION
965      C      USERF=0.0
966      C      IF(XX(71).LE.XX(63)*XX(57)/XX(58))USERF=1.0
967      C      IF(XX(71).LE.XX(62)*XX(57)/XX(58))USERF=2.0
968      C      ENDIF
969      C      RETURN
970      C
971      C
972      C      FUNCTION USERF(12)
973      C      THIS ROUTINE DETERMINES IF TOWING IS REQUIRED; IF SO, RETURN A 1.
974      C      IT DOES THIS BY SEEING IF EACH DIGIT OF THE MX FAILURE CODE IS
975      C      GREATER THAN OR EQUAL TO THE RESPECTIVE DIGIT IN LTOW BEING TESTED
976      C      IF THIS CONDITION IS MET FOR ANY ENCODED NUMBER OF LTOW, THEN THE
977      C      A/C MUST BE TOWED AND USERF EQUALS 1.
978      C
979      C
980      1200 NDIV = 1000000
981      C      NCODE = ATRIB(18)
982      C
983      C      DECODE THE MX FAILURE CODE FOR TAXING
984      C      DO 1210 I = 1,6
985      C      NCODE = MOD(NCODE,NDIV)
986      C      NDIV = NDIV/10
987      C      MXCODE(I) = NCODE/NDIV
988      1210 CONTINUE
989      C
990      C      J = 1
991      1220 CONTINUE
992      C      NNTOW = .TRUE.
993      C      NDIV = 1000000
994      C      NCODE = LTOW(J)
995      C      DO 1230 I = 1,6
996      C      DECODE THE TOWING CODE AND COMPARE TO MX FAILURE CODE
997      C      NCODE = MOD(NCODE,NDIV)

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998          NDIV = NDIV/10
999          NVAL = NCODE/NDIV
1000      C      IF MX FAILURE LEVEL < USER PROVIDED CODE FOR
1001      C      ANY GIVEN DIGIT, THEN DO NOT TOW.
1002          IF(MXCODE(I).LT.NVAL) NNTOW = .FALSE.
1003      1230      CONTINUE
1004          J = J + 1
1005      C      IF NO MATCH AND MORE ENCODED NUMBERS, TRY AGAIN
1006      C      IF(J.LE.NTOW.AND..NOT.NNTOW) GO TO 1220
1007          USERF = 0.0
1008      C      IF(NNTOW) USERF = 1.0
1009          RETURN
1010      C
1011      C
1012      C      FUNCTION USERF(13)
1013      C      THIS ROUTINE DETERMINES IF AN A/C CRASHED DUE TO A MX FAILURE
1014      C      WHILE IN THE AIR. IT OPERATES SIMILAR TO USERF(12).
1015      C
1016      1300      NDIV = 1000000
1017          NCODE = ATRIB(18)
1018      C
1019          DO 1310 I = 1,6
1020              NCODE = MOD(NCODE,NDIV)
1021              NDIV = NDIV/10
1022              MXCODE(I) = NCODE/NDIV
1023      1310      CONTINUE
1024      C
1025          J = 1
1026      1320      CONTINUE
1027          NNCRSH = .TRUE.
1028          NDIV = 1000000
1029          NCODE = LCRSH(J)
1030      C
1031          DO 1330 I = 1,6
1032              NCODE = MOD(NCODE,NDIV)
1033              NDIV = NDIV/10
1034              NVAL = NCODE/NDIV
1035              IF(MXCODE(I).LT.NVAL) NNCRSH = .FALSE.
1036      1330      CONTINUE
1037          J = J + 1
1038      C      IF(J.LE.NCRSH.AND..NOT.NNCRSH) GO TO 1320
1039      C
1040          USERF = 0.0
1041      C      IF(NNCRSH) USERF = 1.0
1042          RETURN
1043      C
1044      C
1045      C      FUNCTION USERF(14)
1046      C      THIS ROUTINE DETERMINES IF AN A/C CRASHED DURING/FOLLOWING A
1047      C      MISSION DUE TO A COMBINATION OF MX FAILURES AND BATTLE DAMAGE

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1048      C   FAILURES. IT IS SIMILAR TO USERF(12), EXCEPT THE BATTLE DAMAGE
1049      C   IS ALSO CONSIDERED.
1050      C
1051      1400 NDIV = 1000000
1052      NCODE = ATRIB(18)
1053      C
1054      MXCODE(7) = ATRIB(16)
1055      DO 1410 I = 1,6
1056      NCODE = MOD(NCODE,NDIV)
1057      NDIV = NDIV/10
1058      MXCODE(I) = NCODE/NDIV
1059      1410 CONTINUE
1060      C
1061      J = 1
1062      1420 CONTINUE
1063      NNBAT = .TRUE.
1064      NDIV = 10000000
1065      NCODE = LBAT(J)
1066      C
1067      DO 1430 I = 1,7
1068      NCODE = MOD(NCODE,NDIV)
1069      NDIV = NDIV/10
1070      NVAL = NCODE/NDIV
1071      IF(MXCODE(I).LT.NVAL) NNBAT = .FALSE.
1072      1430 CONTINUE
1073      C
1074      J = J + 1
1075      IF(J.LE.NBAT.AND..NOT.NNBAT) GO TO 1420
1076      C
1077      USERF = 0.0
1078      IF(NNBAT) USERF = 1.0
1079      RETURN
1080      C
1081      C
1082      C   FUNCTION USERF(15)
1083      C   THIS ROUTINE DETERMINES WHAT OCCURS TO THE A/C DURING THE MISSION.
1084      C   IT RETURNS THE MISSION DURATION THROUGH THE NAME. IT SETS THE
1085      C   BATTLE DAMAGE CODE, ATRIB(16), TO A LEVEL OF 0 TO 5, OR 99 IF KILL-
1086      C   ED. THE DURATION AND BATTLE DAMAGE CODE ARE BASED ON THE AREA THE A/C
1087      C   IS GOING TO, WHICH IS A FUNCTION OF TANK CONFIGURATION, ATRIB(12)
1088      C   AND THE NUMBER OF A/C IN THE FLIGHT. IT ALSO DETERMINES THE WEAP-
1089      C   ON STATUS: ATRIB(9), ATRIB(10), AND ATRIB(11); AND ANY CHANGES IN
1090      C   TANK CONFIGURATION. ADDITIONALLY, IT INSURES THAT EACH A/C ON
1091      C   THE SAME MISSION RECEIVES THE SAME SORTIE DURATION.
1092      C
1093      C   MISSION NUMBER AND NUMBER OF A/C IN THE FLIGHT.
1094      1500 MSN = ATRIB(46)
1095      NAC = ATRIB(44)
1096      C
1097      C   DETERMINE MISSION DURATION AND TO WHICH AREA THE A/C IS GOING

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1098      C
1099      IF (XX(MSN).EQ.0.0) THEN
1100          XX(97) = ATRIB(47)
1101          IF (XX(97).EQ.1.0) THEN
1102              MSNFW(1) = MSNFW(1) + 1
1103          ELSEIF (XX(97).EQ.2.0) THEN
1104              IF (MSNFW(2).GE.MSNRQAZ) THEN
1105                  XX(97) = 1.0
1106                  MSNFW(1) = MSNFW(1) + 1
1107              ELSE
1108                  MSNFW(2) = MSNFW(2) + 1
1109              ENDIF
1110          ELSE
1111              MSNFW(3) = MSNFW(3) + 1
1112          ENDIF
1113          NAR = XX(97)
1114          XX(MSN) = TRIAC(DURMIN(NAR),DURMOD(NAR),DURMAX(NAR),3)
1115      ENDIF
1116      ATRIB(47) = XX(97)
1117      C
1118      USERF = XX(MSN)
1119      C
1120      PRINT STATEMENTS
1121      C
1122      IF (LEVPRT.GE.3.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
1123          PRINT*,'-AIRCRAFT NUMBER ',ATRIB(2),' IS ASSIGNED TO MISSION ',
1124      &      MSN,'. CURRENT TIME IS ',TNOW
1125      ENDIF
1126      IF (LEVPRT.GE.4.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
1127          PRINT*,' MISSION DURATION IS ',XX(MSN)
1128          PRINT*,' AREA IS ',ATRIB(47),' AND # TANKS IS ',ATRIB(12)
1129          PRINT*,' TOTAL SORTIES GENERATED SO FAR IS ',XX(24)
1130      ENDIF
1131      C
1132      C
1133      C      DETERMINE STATUS OF GUN.
1134      X = DRAND(3)
1135      IF (NAC.EQ.2.AND.X.LE.PFGUN2) ATRIB(9) = 0.0
1136      IF (NAC.EQ.3.AND.X.LE.PFGUN3) ATRIB(9) = 0.0
1137      C      IF THE GUN HAS BEEN FIRED, DETERMINE IF IT MALFUNCTIONED.
1138      IF (ATRIB(9).EQ.0.0) THEN
1139          X = DRAND(3)
1140          IF (X.LE.PGUNEXP+PGUNRUN) ATRIB(9) = 2.0
1141          IF (X.LE.PGUNEXP) ATRIB(9) = 3.0
1142      ENDIF
1143      C
1144      C      DETERMINE STATUS OF BOMBS.
1145      X = DRAND(3)
1146      IF (X.LE.PBMDROP) ATRIB(10) = 0.0
1147      C      IF BOMBS ARE RELEASED, DETERMINE IF BOMBS HANG UP.

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1148         IF (ATRI(10).EQ.0.0) THEN
1149             X = DRAND(3)
1150             IF (X.LE.PHUNCBM) ATRI(10) = 2.0
1151         ENDIF
1152     C
1153     C DETERMINE MISSILE STATUS
1154     ATRI(11) = ATRI(11)
1155     C
1156     C DETERMINE STATUS OF EXTERNAL TANKS
1157     NA = ATRI(12)
1158     NW = NOWING(NA)
1159     NC = NOCENT(NA)
1160     NL = ATRI(47)
1161     C
1162     X = DRAND(3)
1163     IF (X.LE.PRLWING(NL)) NW = 0
1164     IF (X.LE.PRLCENT(NL)) NC = 0
1165     C KNOWING THE NUMBER OF WING TANKS (NW) AND THE NUMBER OF
1166     C CENTERLINE TANKS (NC), DETERMINE THE A/C TANK CONFIGURATION
1167     C CODE AND SET ATRI(12).
1168     IF (NW.EQ.0.AND.NC.EQ.0) THEN
1169         ATRI(12) = 0.0
1170     ELSE
1171         DO 1520 I = 1,NA
1172             IF (NOCENT(I).EQ.NC.AND.NOWING(I).EQ.NW) ATRI(12) = I
1173         1520 CONTINUE
1174     ENDIF
1175     C
1176     C DETERMINE ATTRITION, (FUNCTION OF AREA AND # OF A/C IN FLIGHT)
1177     C
1178     X = DRAND(3)
1179     IF (NAC.EQ.2.AND.X.LE.PATTR2(NL)) ATRI(16) = 99.0
1180     IF (NAC.EQ.3.AND.X.LE.PATTR3(NL)) ATRI(16) = 99.0
1181     C
1182     C DETERMINE BATTLE DAMAGE CODE, FUNCTION OF AREA AND NUMBER
1183     C OF A/C IN THE FLIGHT.
1184     C
1185     C
1186     IF (ATRI(16).NE.99.0) THEN
1187         ATRI(16) = 0.0
1188         X = DRAND(3)
1189         IF (NAC.EQ.2.AND.X.LE.PDAM2(NL)) ATRI(16) = 5.0
1190         IF (NAC.EQ.3.AND.X.LE.PDAM3(NL)) ATRI(16) = 5.0
1191         IF (ATRI(16).EQ.5.0) THEN
1192             X = DRAND(3)
1193             IF (X.LE.PDL(1)+PDL(2)+PDL(3)+PDL(4)) ATRI(16) = 4.0
1194             IF (X.LE.PDL(1)+PDL(2)+PDL(3)) ATRI(16) = 3.0
1195             IF (X.LE.PDL(1)+PDL(2)) ATRI(16) = 2.0
1196             IF (X.LE.PDL(1)) ATRI(16) = 1.0
1197         ENDIF

```

```

1198             ENDIF
1199     C
1200     C
1201     C
1202     C
1203     RETURN
1204     C
1205     C
1206     C
1207     C
1208     C    FUNCTION USERF(16)
1209     C    INITIAL DISTRIBUTION OF FAILURE CODES FOR NON-OPERATIONAL A/C.
1210     C
1211     1600 NSUM = 0
1212     C    A 50/50 CHANCE FOR EACH SYSTEM TO FAIL. IF A SYSTEM IS TO
1213     C    FAIL, THE LEVEL OF FAILURE IS UNIFORMLY DISTRIBUTED.
1214     DO 1610 I = 1,6
1215     C
1216         IF(DRAND(3).LT.0.50) THEN
1217             NSUM = NSUM*10 + IFIX(DRAND(3)*5.999)
1218         ELSE
1219             NSUM = NSUM*10
1220         ENDIF
1221     C
1222     1610 CONTINUE
1223     C
1224     USERF = NSUM
1225     RETURN
1226     C
1227     C
1228     C    FUNCTION USERF(17)
1229     C    OBTAIN CURRENT SQUADRON NUMBER FOR THE A/C DESIGNATED
1230     C    BY ATRIB(2)
1231     C
1232     1700 USERF = NCSQ(IFIX(ATRIB(2)))
1233     RETURN
1234     C
1235     C
1236     C    FUNCTION USERF(18)
1237     C    SET NCSQ TO CURRENT SQ# FOR GIVEN TAIL #
1238     C
1239     1800 USERF = XX(72)
1240     NCSQ(IFIX(XX(72))) = ATRIB(1)
1241     RETURN
1242     C
1243     C
1244     C    FUNCTION USERF(19)
1245     C    MARK THE A/C WITH TAIL #, ATRIB(2), DESTROYED.
1246     1900 USERF = ATRIB(2)
1247     NCSQ(IFIX(ATRIB(2))) = 999999

```

1248		RETURN
1249	C	
1250	C	
1251	C	END OF SECTION 1, UTILITY.
1252	C	

```

1253      C      *****
1254      C      SECTION 2, PARKING -- USERF(21) TO USERF(23)
1255      C      *****
1256      C      2000 CONTINUE
1257      C
1258      C      GLOSSARY OF VARIABLES USED IN THIS SECTION.
1259      C      COMMON/UDOM2/NPARKING(6,50,2),NTYPE(6,3)
1260      C
1261      C      INTEGER VALUE VARIABLES:
1262      C      NPARK - PARKING SPACES FOR THE SIX SQDN'S:
1263      C          INDEX 1, SQUADRON NUMBER
1264      C          INDEX 2, PARKING SPOT (SHELTERS,REVTMENT,DISPERSED)
1265      C          INDEX 3, TWO SPOTS (IN SHELTERS) FOR NIGHT.
1266      C      NTYPE - THE NUMBER OF EACH TYPE OF PARKING FOR THE SIX SQDN'S:
1267      C          INDEX 1, SQUADRON NUMBER
1268      C          INDEX 2, TYPE OF PARKING SPOT - NTYPE(I,X) WHERE
1269      C              X=1, NUMBER OF SHELTERS FOR SQDN #,
1270      C              X=2, NUMBER OF REVTMENTS FOR SQDN #,
1271      C              X=3, NUMBER OF DISPERSED SPOTS FOR SQDN #.
1272      C      NSQDN - SQUADRON NUMBER (1 TO 6).
1273      C      NTAIL - AIRCRAFT TAIL NUMBER.
1274      C      NCNT - INDEX VARIABLE.
1275      C      JCNT - INDEX VARIABLE.
1276      C      NFUNC - FUNCTION BEING ACCESSED.
1277      C      END OF GLOSSARY
1278      C
1279      C
1280      C      DETERMINE WHICH USER FUNCTION IS BEING ACCESSED IN THIS SECTION
1281      C      NFUNC = MOD(IFN,10)
1282      C      GO TO (2100,2200,2300),NFUNC
1283      C
1284      C
1285      C      FUNCTION USERF(21)
1286      C      THIS ROUTINE PARKS AIRCRAFT DURING THE NORMAL DAY TIME OPERATION
1287      C      OF THE AIRFIELD. IT USED THE RULE OF TRYING TO PARK AN AIRCRAFT
1288      C      IN A SHELTER FIRST, IF ONE NOT AVAILABLE, THEN A REVTMENT, ELSE
1289      C      IF NOTHING BETTER IS OPEN, DISPERSED IN THE OPEN. IF THE TOTAL
1290      C      NUMBER OF PARKING SPOTS IS EXCEEDED, A WARNING MESSAGE IS PRINTED.
1291      C
1292      C      2100 NCNT = 1
1293      C      NSQDN = ATRIB(1)
1294      C      NTAIL = ATRIB(2)
1295      C
1296      C      2110 IF(NPARK(NSQDN,NCNT,1).EQ.0) GO TO 2120
1297      C      NCNT = NCNT + 1
1298      C      IF(NCNT.LE.50) GO TO 2110
1299      C      USERF = 99.0
1300      C      PRINT*, ' AIRCRAFT ',NTAIL,' HAS NO PARKING SPOT.'
1301      C      RETURN
1302      C

```

```

1303      C      ONCE A SPOT IS FOUND, THE TYPE CODE MUST BE SET:
1304      C      1=SHELTER, 2=REVTMENT, 3=DISPERSED.
1305      2120 USERF = 1.0
1306      IF(NCNT.GT.NTYPE(NSQDN,1)) USERF = 2.0
1307      IF(NCNT.GT.NTYPE(NSQDN,2)+NTYPE(NSQDN,1)) USERF = 3.0
1308      NPARK(NSQDN,NCNT,1)=NTAIL
1309      RETURN
1310      C
1311      C
1312      C      FUNCTION USERF(22)
1313      C      THIS ROUTINE UNPARKS AN AIRCRAFT. IT SETS THE PARKING SPOT TO 0
1314      C      AND RETURNS A VALUE OF 0. IF AIRCRAFT IS NOT FOUND IN PARKING,
1315      C      A WARNING MESSAGE IS PRINTED.
1316      C
1317      2200 NCNT = 1
1318      JCNT = 1
1319      NSQDN = ATRIB(1)
1320      NTAIL = ATRIB(2)
1321      C
1322      2210 IF(NPARK(NSQDN,NCNT,JCNT).EQ.NTAIL) GO TO 2220
1323      NCNT = NCNT + 1
1324      IF(NCNT.LE.50) GO TO 2210
1325      C
1326      NCNT = 1
1327      JCNT = JCNT + 1
1328      IF(JCNT.LE.2) GO TO 2210
1329      C
1330      USERF = 0.0
1331      PRINT*,' AIRCRAFT ',NTAIL,' CAN NOT BE LOCATED IN PARKING.'
1332      RETURN
1333      C
1334      2220 NPARK(NSQDN,NCNT,JCNT) = 0
1335      USERF = 0.0
1336      RETURN
1337      C
1338      C
1339      C      FUNCTION USERF(23)
1340      C      THIS ROUTINE PARKS THE AIRCRAFT THAT ARE INITIALLY BROKEN. IT
1341      C      PARKS THEM IN REVERSE PRIORITY -- DISPERSED, REVTED,SHELTERED.
1342      C      IF NO SPACE IS FOUND, A WARNING MESSAGE IS PRINTED.
1343      C
1344      2300 NCNT = 50
1345      NSQDN = ATRIB(1)
1346      NTAIL = ATRIB(2)
1347      C
1348      2310 IF(NPARK(NSQDN,NCNT,1).EQ.0) GO TO 2320
1349      NCNT = NCNT - 1
1350      IF(NCNT.NE.0) GO TO 2310
1351      USERF = 99.0
1352      PRINT*,' NO PARKING SPACE AVAILABLE FOR AIRCRAFT ',NTAIL

```

```

1353          RETURN
1354      C
1355      C      ONCE A SPOT IS FOUND, THE TYPE CODE MUST BE DETERMINED:
1356      C      1=SHELTER, 2=REVTMENT, 3=DISPERSED.
1357      2320 USERF = 1.0
1358          IF(NCNT.GT.NTYPE(NSQDN,1)) USERF = 2.0
1359          IF(NCNT.GT.NTYPE(NSQDN,2)) USERF = 3.0
1360          NPARK(NSQDN,NCNT,1) = NTAIL
1361          RETURN
1362      C
1363      C
1364      C      END OF SECTION 2, PARKING.
1365      C
1366      C
1367      C

```

```

1368      C      *****
1369      C      SECTION 3, EXAMINE CODE -- USERF(31) TO USERF(39)
1370      C      *****
1371      C      3000 CONTINUE
1372      C
1373      C      GLOSSARY OF VARIABLES USED IN THIS SECTION.
1374      C
1375      C      INTEGER VALUE VARIABLES:
1376      C      MAX - MAXIMUM LEVEL FOUND.
1377      C      NDIV - VALUE USED IN DECODING MX FAILURE CODE.
1378      C      NCODE - MX FAILURE CODE BEING EXAMINED.
1379      C      NVAL - TEMPORARY VALUE STORAGE LOCATION.
1380      C      NFUNC - USER FUNCTION BEING SELECTED.
1381      C      END OF GLOSSARY.
1382      C
1383      C
1384      C      THE MX FAILURE CODE IS A SIX DIGIT INTEGER, EACH DIGIT REPRESENTING THE LEVEL OF FAILURE (0-5, 0 BEING NO PROBLEM TO 5 BEING A SERIOUS PROBLEM). THE MOST SIGNIFICANT DIGIT OF THE CODE IS FOR SYSTEM 1, THE LEAST SIGNIFICANT IS SYSTEM 6. DETERMINE WHICH USER FUNCTION IS BEING ACCESSED.
1385      C
1386      C      NFUNC = MOD(IFN,10)
1387      C      GOTO(3100,3200,3300,3400,3500,3600,3700,3800,3900),NFUNC
1388      C
1389      C
1390      C      FUNCTION USERF(31)
1391      C      OBTAIN LEVEL OF SYSTEM ONE (DIGIT 1 OF MX FAILURE CODE).
1392      C
1393      C      3100 NCODE = ATRIB(18)
1394      C      USERF = MOD(NCODE,1000000)/100000
1395      C      RETURN
1396      C
1397      C
1398      C      FUNCTION USERF(32)
1399      C      OBTAIN LEVEL OF SYSTEM TWO (DIGIT 2 OF MX FAILURE CODE).
1400      C
1401      C      3200 NCODE = ATRIB(18)
1402      C      USERF = MOD(NCODE,100000)/10000
1403      C      RETURN
1404      C
1405      C
1406      C      FUNCTION USERF(33)
1407      C      OBTAIN LEVEL OF SYSTEM THREE (DIGIT 3 OF MX FAILURE CODE).
1408      C
1409      C      3300 NCODE = ATRIB(18)
1410      C      USERF = MOD(NCODE,10000)/1000
1411      C      RETURN
1412      C
1413      C
1414      C      FUNCTION USERF(34)
1415      C      OBTAIN LEVEL OF SYSTEM FOUR (DIGIT 4 OF MX FAILURE CODE).
1416      C
1417      C      3400 NCODE = ATRIB(18)
1418      C      USERF = MOD(NCODE,1000)/100

```

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1418             RETURN
1419 C
1420 C
1421 C
1422 C     FUNCTION USERF(35)
1423 C     OBTAIN LEVEL OF SYSTEM FIVE (DIGIT 5 OF MX FAILURE CODE).
1424 3500 NCODE = ATRIB(18)
1425     USERF = MOD(NCODE,100)/10
1426     RETURN
1427 C
1428 C
1429 C     FUNCTION USERF(36)
1430 C     OBTAIN LEVEL OF SYSTEM SIX (DIGIT 6 OF MX FAILURE CODE).
1431 3600 NCODE = ATRIB(18)
1432     USERF = MOD(NCODE,10)
1433     RETURN
1434 C
1435 C
1436 C     FUNCTION USERF(37)
1437 C     ROUTINE TO DETERMINE THE MAXIMUM LEVEL OF ALL MX FAILURES.
1438 3700 MAX = 0
1439     NDIV = 1000000
1440     NCODE = ATRIB(18)
1441 C
1442     DO 3720 I = 1,6
1443         NCODE = MOD(NCODE,NDIV)
1444         NDIV = NDIV/10
1445         NVAL = NCODE/NDIV
1446         IF(NVAL.GT.MAX)MAX = NVAL
1447 3720 CONTINUE
1448 C
1449     USERF = MAX
1450     RETURN
1451 C
1452 C
1453 C     FUNCTION USERF(38)
1454 C     DETERMINE A/C PRIORITY FOR MX (WC/MMT) - LEAST BROKE FIRST.
1455 C     THE VALUES OF ALL SYSTEMS WITH 4 AND 5 LEVEL VALUES ARE ADDED,
1456 C     LOWEST SUM HAS FIRST PRIORITY.
1457 C
1458 3800 NCODE = ATRIB(18)
1459     NDIV = 1000000
1460     NSUM = 0
1461     DO 3820 I = 1,6
1462         NCODE = MOD(NCODE,NDIV)
1463         NDIV = NDIV/10
1464         NVAL = NCODE/NDIV
1465         IF(NVAL.GE.4) NSUM = NSUM + NVAL
1466 3820 CONTINUE
1467     USERF = NSUM

```

```

1468          RETURN
1469      C
1470      C
1471      C      FUNCTION USERF(39)
1472      C      DETERMINE A/C PRIORITY FOR SQ MX - LEAST BROKE FIRST.
1473      C      THE VALUES OF ALL SYSTEMS WITH FAILURE LEVELS GREATER THAN OR
1474      C      EQUAL TO 2 ARE ADDED, LOWEST SUM HAS FIRST PRIORITY.
1475      C
1476      3900 NCODE = ATRIB(18)
1477      NDIV = 1000000
1478      NSUM = 0
1479      DO 3920 I = 1,6
1480          NCODE = MOD(NCODE,NDIV)
1481          NDIV = NDIV/10
1482          NVAL = NCODE/NDIV
1483          IF(NVAL.GE.2) NSUM = NSUM + NVAL
1484      3920 CONTINUE
1485      USERF = NSUM
1486      RETURN
1487      C
1488      C
1489      C      END OF SECTION 3, EXAMINE CODE.
1490      C
1491      C
1492      C
1493      C
1494      C

```

```

1495      C      *****
1496      C      SECTION 4, RESET CODE -- USERF(41) TO USERF(47)
1497      C      *****
1498      4000 CONTINUE
1499      C
1500      C      GLOSSARY OF VARIABLES USED IN THIS SECTION.
1501      C
1502      C      INTEGER VALUE VARIABLES
1503      C      NCODE - MX FAILURE CODE BEING EXAMINED.
1504      C      NVAL - TEMPORARY VALUE STORAGE LOCATION.
1505      C      NFUNC - USER FUNCTION BEING SELECTED
1506      C      NSUM - NEW FAILURE CODE AFTER RESETTNG ALL LEVELS.
1507      C      NDIV - VALUE USED TO DECODE MX FAILURE CODE.
1508      C      END OF GLOSSARY.
1509      C
1510      C      THE MX FAILURE CODE IS A SIX DIGIT INTEGER, EACH DIGIT REPRESENTING
1511      C      THE SERIOUSNESS OF ONE OF SIX SYSTEMS. THE DIGIT
1512      C      CAN TAKE ON THE VALUE OF 0 TO 5 (0 - NO PROBLEM, 5 - MOST
1513      C      SERIOUS PROBLEM). THE MOST SIGNIFICANT DIGIT IS FOR SYSTEM
1514      C      1, THE LEAST SIGNIFICANT DIGIT IS FOR SYSTEM 6.
1515      C
1516      C      DETERMINE WHICH USER FUNCTION IS BEING ACCESSED.
1517      C      NFUNC = MOD(IFN,10)
1518      C      GOTO(4100,4200,4300,4400,4500,4600,4700),NFUNC
1519      C
1520      C
1521      C      FUNCTION USERF(41)
1522      C      ZERO OUT LEVEL OF SYSTEM ONE IN MX FAILURE CODE, UNLESS IT IS ONE.
1523      4100 NCODE = ATRIB(18)
1524      C      NVAL = NCODE/100000
1525      C      IF(NVAL.NE.1)NVAL = 0
1526      C      USERF = NVAL*100000 + MOD(NCODE,100000)
1527      C      RETURN
1528      C
1529      C
1530      C      FUNCTION USERF(42)
1531      C      ZERO OUT LEVEL OF SYSTEM 2 IN MX FAILURE CODE, UNLESS IT IS ONE.
1532      4200 NCODE = ATRIB(18)
1533      C      NVAL = MOD(NCODE,100000)/10000
1534      C      IF(NVAL.NE.1)NVAL = 0
1535      C      USERF = (NCODE/100000*10+NVAL)*10000 + MOD(NCODE,10000)
1536      C      RETURN
1537      C
1538      C
1539      C      FUNCTION USERF(43)
1540      C      ZERO OUT LEVEL OF SYSTEM 3 IN MX FAILURE CODE, UNLESS IT IS ONE.
1541      4300 NCODE = ATRIB(18)
1542      C      NVAL = MOD(NCODE,10000)/1000
1543      C      IF(NVAL.NE.1)NVAL = 0
1544      C      USERF = (NCODE/10000*10+NVAL)*1000 + MOD(NCODE,1000)

```

```

1545             RETURN
1546 C
1547 C
1548 C     FUNCTION USERF(44)
1549 C     ZERO OUT LEVEL OF SYSTEM 4 IN MX FAILURE CODE, UNLESS IT IS ONE.
1550 4400 NCODE = ATRIB(18)
1551       NVAL = MOD(NCODE,1000)/100
1552       IF(NVAL.NE.1)NVAL = 0
1553       USERF = (NCODE/1000*10+NVAL)*100 + MOD(NCODE,100)
1554       RETURN
1555 C
1556 C
1557 C     FUNCTION USERF(45)
1558 C     ZERO OUT LEVEL OF SYSTEM 5 IN MX FAILURE CODE, UNLESS IT IS ONE.
1559 4500 NCODE = ATRIB(18)
1560       NVAL = MOD(NCODE,100)/10
1561       IF(NVAL.NE.1)NVAL = 0
1562       USERF = (NCODE/100*10+NVAL)*10 + MOD(NCODE,10)
1563       RETURN
1564 C
1565 C
1566 C     FUNCTION USERF(46)
1567 C     ZERO OUT LEVEL OF SYSTEM 6 IN MX FAILURE CODE, UNLESS IT IS ONE.
1568 4600 NCODE = ATRIB(18)
1569       NVAL = MOD(NCODE,10)
1570       IF(NVAL.NE.1)NVAL = 0
1571       USERF = NCODE/10*10 + NVAL
1572       RETURN
1573 C
1574 C     FUNCTION USERF(47)
1575 C     ZERO OUT LEVEL OF ALL SYSTEMS IN MX FAILURE CODE, UNLESS IT IS 1.
1576 4700 NCODE = ATRIB(18)
1577       NDIV = 1000000
1578       NSUM = 0
1579 C
1580       DO 4720 I = 1,6
1581         NCODE = MOD(NCODE,NDIV)
1582         NDIV = NDIV/10
1583         NVAL = NCODE/NDIV
1584         IF(NVAL.NE.1)NVAL = 0
1585         NSUM = NSUM*10 + NVAL
1586 4720 CONTINUE
1587 C
1588       USERF = NSUM
1589       RETURN
1590 C
1591 C
1592 C     END OF SECTION 4, RESET CODES
1593 C
1594 C

```

1595
1596

C
C

```

1597      C      *****
1598      C      SECTION 5, ALTER CODE -- USERF(51) TO USERF(53)
1599      C      *****
1600      C      5000 CONTINUE
1601      C
1602      C      GLOSSARY OF VARIABLES USED IN THIS SECTION.
1603      C      COMMON/UCOM5/SYS(6,4),SYSTOL(6),MTBF(6),ALP(6),BET(6),NBATREP(5),
1604      C      &      ERUNMIN,ERUNMAX
1605      C
1606      C      REAL VALUE VARIABLES:
1607      C      SYS - CUMULATIVE PROBABILITIES TO DETERMINE LEVEL OF MX
1608      C      FAILURE FOR SYSTEM 1 THRU 6
1609      C      INDEX 1 - SYSTEM NUMBER
1610      C      NBATREP CODES ARE SET IN INTLC. THEY INDICATE THE APPROXIMATE
1611      C      LEVEL OF DAMAGE EACH SYSTEM WOULD HAVE FOR A GIVEN LEVEL OF
1612      C      BATTLE DAMAGE. WITH THESE VALUES, THE ROUTINE TAKES THE
1613      C      GREATER OF THE TWO NUMBERS (MX FAILURE LEVEL, NBATREP LEVEL)
1614      C      FOR EACH SYSTEM (1-6) AND CREATES A NEW MX FAILURE CODE.
1615      C      INDEX 2 - LEVEL OF REPAIR 1 TO 4 (CUM. OF 5 IS 1.00)
1616      C      SYSTOL- TOLERANCE WHICH ALLOWS MX FAILURES TO OCCUR DURING
1617      C      PILOT PREFLIGHT; IF 0, IGNORE THAT SYSTEM.
1618      C      TOPER - A/C TOTAL MINUTES OF OPERATION (ENGINE RUNNING).
1619      C      X - TEMPORARY STORAGE OF RANDOM DRAW.
1620      C      MTBF - MEAN TIME BETWEEN FAILURE.
1621      C
1622      C      INTEGER VALUE VARIABLES:
1623      C      NOODE - TEMPORARY VALUE OF MX FAILURE CODE.
1624      C      NDIV - USED TO DECODE MX FAILURE CODE.
1625      C      NVAL - SINGLE DIGIT OF MX CODE BEING TESTED.
1626      C      NEW - NEW DIGIT (LEVEL OF FAILURE FOR SYSTEM I).
1627      C      NSUM - NEW MX FAILURE CODE.
1628      C
1629      C      END OF GLOSSARY.
1630      C
1631      C      THE MX FAILURE CODE IS A SIX DIGIT INTEGER, EACH DIGIT REPRESENTING THE SERIOUSNESS OF ONE OF SIX SYSTEMS. THE DIGIT CAN TAKE ON THE VALUE OF 0 TO 5 (0 - NO PROBLEM, 5 - MOST SERIOUS PROBLEM). THE MOST SIGNIFICANT DIGIT IS FOR SYSTEM 1, THE LEAST SIGNIFICANT DIGIT IS FOR SYSTEM 6.
1632      C      DETERMINE WHICH USER FUNCTION IS BEING ACCESSED IN THIS SECTION
1633      C      NFUNC = MOD(IFN,10)
1634      C      GO TO (5100,5200,5300),NFUNC
1635      C
1636      C      FUNCTION USERF(51)
1637      C      THIS ROUTINE DETERMINES IF A SYSTEM FAILED BY COMPARING CURRENT A/C TOTAL OPERATING TIME TO NEXT TIME OF FAILURE (NTOF) FOR THAT SYSTEM. IF A SYSTEM FAILS, THE LEVEL IS DETERMINED STOCHASTICALLY. THE GREATER OF THE NEW AND OLD LEVELS FOR A PARTICULAR SYSTEM IS ALWAYS CHOSEN.
1638      C
1639      C
1640      C
1641      C
1642      C
1643      C
1644      C
1645      C
1646      C

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```

1647      C
1648      5100 NCODE = ATRIB(18)
1649      TOPER = ATRIB(7)
1650      NDIV = 1000000
1651      NSUM = 0
1652      NSML = 0
1653      NBIG = 0
1654      C
1655      DO 5110 I = 1,6
1656          NCODE = MOD(NCODE,NDIV)
1657          NDIV = NDIV/10
1658          NVAL = NCODE/NDIV
1659      C      SYSTEMS ARE ONLY ALLOWED TO BREAK ONCE, THE LEVEL IS THEN SET
1660      C      UNTIL THE NTOF IS RESET (MOST OF THE TIME AFTER MX).
1661      C
1662          IF(NVAL.LE.1)THEN
1663              NSML = NSML + 1
1664              IF(TOPER.GE.ATRIB(18+I)) THEN
1665      C          IF A/C ENGINE TOTAL OPERATING TIME, TOPER, IS GREATER
1666      C          THAN OR EQUAL TO THE NTOF FOR ANY SYSTEM, A FAILURE
1667      C          LEVEL IS SET.
1668              X = DRAND(5)
1669              NVAL = 5
1670              IF(X.LE.SYS(I,4)) NVAL = 4
1671              IF(X.LE.SYS(I,3)) NVAL = 3
1672              IF(X.LE.SYS(I,2)) NVAL = 2
1673              IF(X.LE.SYS(I,1)) NVAL = 1
1674      C          IF THE LEVEL IS 1, THE NTOF IS RESET TO
1675      C          ALLOW THAT SYSTEM TO BREAK AGAIN, SINCE
1676      C          LEVEL 1 PROBLEMS ARE NOT FIXED BY MX.
1677              IF(NVAL.EQ.1)THEN
1678                  ATRIB(18+I)=ATRIB(7) +
1679      &          (1+BET(I)/ALP(I))*MTBF(I)*BETA(ALP(I),BET(I),2)
1680              ELSE
1681                  NBIG = NBIG + 1
1682              ENDIF
1683          ENDIF
1684      ENDIF
1685      C
1686      NSUM = NSUM*10 + NVAL
1687      5110 CONTINUE
1688      C
1689      C      COUNT THE NUMBER OF A/C THAT HAVE BROKEN SINCE THEY WERE LAST
1690      C      IN MAINTENANCE.
1691      IF(NSML.EQ.6.AND.NBIG.GT.0)XX(100) = XX(100) + 1
1692      C
1693      USERF = NSUM
1694      RETURN
1695      C
1696      C

```

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1697      C      FUNCTION USERF(52)
1698      C      THIS ROUTINE ALTERS THE NEXT TIME OF FAILURE (NTOF) TO CURRENT TOTAL
1699      C      OPERATING MINUTES IF THE DIFFERENCE BETWEEN THEM FOR SYSTEM I IS .LE.
1700      C      SYSTOL(I) MINUTES. USED TO CAUSE A PREFLIGHT MX FAILURE.
1701      C
1702      5200 TOPER = ATRIB(7)
1703      DO 5210 I = 1,6
1704      IF(ATRIB(18+I) - TOPER.LE.SYSTOL(I)) ATRIB(18+I) = TOPER
1705      5210 CONTINUE
1706      USERF = ATRIB(18)
1707      RETURN
1708      C
1709      C
1710      C      FUNCTION USERF(53)
1711      C      THIS ROUTINE COMBINES THE MX FAILURE CODE WITH THE BATTLE DAMAGE
1712      C      CODE TO INSURE MX IS PERFORMED ON BATTLE DAMAGE. ALSO DETERMINES
1713      C      IF AN A/C IS REPAIRABLE OR JUNK(999999).
1714      C
1715      C      NC IS THE BATTLE DAMAGE LEVEL WHICH IS SET IN MISSION ROUTINE,
1716      C      USERF(15).
1717      5300 NC = ATRIB(16)
1718      C
1719      IF(NBATREP(NC).EQ.999999) THEN
1720      C      A/C IS BEYOND REPAIR
1721      ATRIB(18) = 999999.0
1722      ELSE
1723      C      MODIFY MX CODE TO INCORPORATE THE BATTLE DAMAGE CODE
1724      NSUM = 0
1725      NDIV = 1000000
1726      NCODE= ATRIB(18)
1727      NBTL = NBATREP(NC)
1728      C
1729      C
1730      DO 5320 I = 1,6
1731      NCODE = MOD(NCODE,NDIV)
1732      NBTL = MOD(NBTL,NDIV)
1733      NDIV = NDIV/10
1734      NVAL = NCODE/NDIV
1735      IF(NBTL/NDIV.GT.NVAL) NVAL = NBTL/NDIV
1736      NSUM = NSUM*10 + NVAL
1737      5320 CONTINUE
1738      ATRIB(16) = NSUM
1739      ENDIF
1740      USERF = ATRIB(18)
1741      C
1742      RETURN
1743      C
1744      C      END OF SECTION 5, ALTER CODE.
1745      C
1746      C

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1747
1748

C
C

```

1749      C      *****
1750      C      SECTION 6, TRAVEL TIME -- USERF(61) TO USERF(67)
1751      C      *****
1752      C      6000 CONTINUE
1753      C
1754      C      GLOSSARY OF VARIABLES USED IN THIS SECTION
1755      C      COMMON/DIST(13,13),TOW(3),TAXI(3),CREW(3)
1756      C
1757      C      REAL VALUE VARIABLES:
1758      C      DIST - THE DISTANCE FROM POINT I (INDEX 1) TO POINT J (INDEX 2)
1759      C      TOW  - THE LOWER BOUND, MODE, AND UPPER BOUND TRAVEL RATE.
1760      C      TAXI - THE LOWER BOUND, MODE, AND UPPER BOUND TRAVEL RATE.
1761      C      CREW  - THE LOWER BOUND, MODE, AND UPPER BOUND TRAVEL RATE.
1762      C      DIST - MATRIX OF DISTANCES BETWEEN POINTS ON THE FIELD.
1763      C
1764      C      INTEGER VALUE VARIABLES:
1765      C      I    - POINT ON FIELD FROM
1766      C      J    - POINT ON FIELD TO
1767      C
1768      C      END OF GLOSSARY
1769      C
1770      C
1771      C      DETERMINE FUNCTION BEING ACCESSED.
1772      C      NFUNC = MOD(IFN,10)
1773      C      GO TO(6100,6200,6300,6400,6500,6600,6700),NFUNC
1774      C      FUNCTION USERF(61)
1775      C      ROUTINE TO DETERMINE TAXI TIME FROM POINT I, ATRIB(13) TO
1776      C      SQUADRON J, ATRIB(1)
1777      C
1778      C      6100 I = IFIX(ATRIB(13))
1779      C      J = IFIX(ATRIB(1))
1780      C      USERF = DIST(I,J) / TRIAC(TAXI(1),TAXI(2),TAXI(3),3)
1781      C      RETURN
1782      C
1783      C
1784      C      FUNCTION USERF(62)
1785      C      ROUTINE TO DETERMINE TAXI TIME FROM POINT I, ATRIB(13) TO
1786      C      WING AREA, CODE 9.
1787      C
1788      C      6200 I = IFIX(ATRIB(13))
1789      C      J = 9
1790      C      USERF = DIST(I,J) / TRIAC(TAXI(1),TAXI(2),TAXI(3),3)
1791      C      RETURN
1792      C
1793      C
1794      C      FUNCTION USERF(63)
1795      C      DETERMINE TAXI TIME FROM SQDN I, ATRIB(13) TO ARMING AREA, CODE 7
1796      C
1797      C      6300 I = IFIX(ATRIB(13))
1798      C      J = 7

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1799          USERF = DIST(I,J) / TRIAC(TAXI(1),TAXI(2),TAXI(3),3)
1800      RETURN
1801      C
1802      C
1803      C      FUNCTION USERF(64)
1804      C      DETERMINE TAXI TIME FROM HOTPIT TO POINT J, ATRIB(13).
1805      C
1806      6400 I = 11
1807          J = IFIX(ATRIB(13))
1808          USERF = DIST(I,J) / TRIAC(TAXI(1),TAXI(2),TAXI(3),3)
1809      RETURN
1810      C
1811      C
1812      C      FUNCTION USERF(65)
1813      C      DETERMINE TOW TIME FROM POINT I, ATRIB(13) TO SBDN J, ATRIB(1).
1814      C
1815      6500 I = IFIX(ATRIB(13))
1816          J = IFIX(ATRIB(1))
1817          USERF = DIST(I,J) / TRIAC(TOW(1),TOW(2),TOW(3),3)
1818      RETURN
1819      C
1820      C
1821      C      FUNCTION USERF(66)
1822      C      DETERMINE TOW TIME FROM POINT I, ATRIB(13), TO WING AREA, CODE 9.
1823      C
1824      6600 I = IFIX(ATRIB(13))
1825          J = 9
1826          USERF = DIST(I,J) / TRIAC(TOW(1),TOW(2),TOW(3),3)
1827      RETURN
1828      C
1829      C
1830      C      FUNCTION USERF(67)
1831      C      CREW TRAVEL TIME FROM POINT I, ATRIB(13) TO SBDN J, ATRIB(1).
1832      C
1833      6700 I = IFIX(ATRIB(13))
1834          J = IFIX(ATRIB(1))
1835          USERF = DIST(I,J) / TRIAC(CREW(1),CREW(2),CREW(3),3)
1836      RETURN
1837      C
1838      C
1839      C      END OF SECTION 6, TRAVEL TIME.
1840      C
1841      C
1842      C

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1843      C      *****
1844      C      SECTION 7, TURNAROUND -- USERF(71) TO USERF(78)
1845      C      *****
1846      7000 CONTINUE
1847      C
1848      C      GLOSSARY OF VARIABLES USED IN THIS SECTION
1849      C      COMMON/UCOM7/NOCENT(3),NOWING(3),CPCENT,CPWING,CPINTR,
1850      C      &CDRATE,&GNDMAX,PERLEFT(3),REFRAT(3),UPTIME,DNTIME,
1851      C      &DARMNOR(3),DARMHUG(3),DARMRUN(3),DARMEXP(3),
1852      C      &RARMNOR(3),RARMHUG(3),RARMGUN(3),RARMBCV(3)
1853      C      COMMON/STATS/MAXCONF(6),NACTYPE(6,3),NCSQ(300),MSNRQAZ,MSNFW(3)
1854      C
1855      C      REAL VALUE VARIABLES:
1856      C      GNDTM - GROUND RUNNING TIME OF A/C SINCE LAST REFUELING.
1857      C      AIRTM - AIR RUNNING TIME OF A/C SINCE LAST REFUELING.
1858      C      GNDRATE- RATE OF FUEL CONSUMPTION ON GROUND.
1859      C      AIRRATE- RATE OF FUEL CONSUMPTION IN AIR.
1860      C      POLUSED- POL BURNED SINCE LAST REFUELING.
1861      C      CENTKCP- CAPACITY OF EXTERNAL CENTERLINE TANK(S).
1862      C      WOTKCAP- CAPACITY OF EXTERNAL WING TANKS.
1863      C      CAPINT - INTERNAL CAPACITY OF FUEL FOR A/C.
1864      C      AMTREM - AMOUNT REMAINING.
1865      C      TOTVOL - TOTAL POL CAPACITY OF A/C.
1866      C      GNDMAX - MAX GND TIME WITHOUT REFUELING.
1867      C      UPRATE - RATE OF UNLOADING EXTERNAL TANKS.
1868      C      DNRATE - RATE OF DOWN-LOADING EXTERNAL TANKS.
1869      C      NOCONF - CURRENT A/C CONFIGURATION
1870      C      NSQ - A/C SQUADRON NUMBER
1871      C      MAXCONF- CONFIGURATION NUMBER FOR SQUADRON
1872      C      NACTYPE- # OF A/C PER SQDN PER CONFIGURATION
1873      C
1874      C
1875      C      END OF GLOSSARY
1876      C      NFUNC = MOD(IFN,10)
1877      C      GO TO (7100,7200,7300,7400,7500,7600,7700,7800),NFUNC
1878      C
1879      C      FUNCTION USERF(71)
1880      C      DETERMINE THE FUEL REQ'D: ATRIB(14),GROUND OPERATING TIME;
1881      C      ATRIB(15), AIR OPERATING TIME. IF ATRIB(15) EQUALS 0, THEN
1882      C      NO AIR TIME OR HOT PIT REFUELED
1883      C
1884      C      A/C TANK CONFIGURATION (NC)
1885      C      7100 NC = ATRIB(12)
1886      C
1887      C      IF(ATRIB(15).NE.0.0) THEN
1888      C
1889      C      THE A/C HAS AIR TIME ON IT SINCE THE LAST REFUELING.
1890      C      AMTLEFT= CPINTR*TRIAC(PERLEFT(1),PERLEFT(2),PERLEFT(3),3)
1891      C      AMTLEFT= AMTLEFT - ATRIB(14)*CDRATE
1892      C      IF(AMTLEFT.LT.0.0) AMTLEFT = 0.0
1893      C      IF(NC.GT.0) THEN

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1893          TOTVOL = CPINTR + NOCENT(NC)*CPCENT + NOWING(NC)*CPWING
1894      ELSE
1895          TOTVOL = CPINTR
1896      ENDIF
1897      AMTREQ = TOTVOL - AMTLEFT
1898      C
1899      ELSEIF(ATTRIB(14).GE.GNDMAX) THEN
1900          IF(NC.GT.0) THEN
1901              TOTVOL = CPINTR + NOCENT(NC)*CPCENT + NOWING(NC)*CPWING
1902          ELSE
1903              TOTVOL = CPINTR
1904          ENDIF
1905          AMTUSED= ATTRIB(14)*CDRATE
1906          IF(AMTUSED.GT.TOTVOL) AMTUSED = TOTVOL
1907          AMTREQ= TOTVOL - AMTUSED
1908      C
1909      ELSE
1910          AMTREQ = 0.0
1911      ENDIF
1912      C
1913      AMTREQ = AMTREQ*0.000720463
1914      USERF = AMTREQ
1915      C
1916      RETURN
1917      C
1918      C
1919      C FUNCTION USERF(72)
1920      C RECALCULATE FUEL REQUIRED DUE TO TANK RECONFIGURATION. ATTRIB(8)
1921      C HAS NEW CONFIGURATION, WHILE ATTRIB(12) HAS OLD CONFIGURATION.
1922      C
1923      7200 NC = ATTRIB(8)
1924      C
1925      CPNEW = CPINTR + NOCENT(NC)*CPCENT + NOWING(NC)*CPWING
1926      C
1927      NC = ATTRIB(12)
1928      C
1929      IF(NC.GT.0) THEN
1930          CPOLD = CPINTR + NOCENT(NC)*CPCENT + NOWING(NC)*CPWING
1931      ELSE
1932          CPOLD = CPINTR
1933      ENDIF
1934      C
1935      IF(CPOLD.LT.CPNEW) THEN
1936          USERF = ATTRIB(15) + (CPNEW - CPOLD)*0.000720463
1937      ELSEIF(CPOLD.GT.CPNEW) THEN
1938          AMTREQ = ATTRIB(15) - (CPOLD - CPNEW)*0.000720463
1939          IF(AMTREQ.LT.0.0) AMTREQ = 0.0
1940          USERF = AMTREQ
1941      ELSE
1942          USERF = ATTRIB(15)

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1943          ENDIF
1944      C
1945      RETURN
1946      C
1947      C
1948      FUNCTION USERF(73)
1949      RECONFIGURATION REQUIREMENT
1950      NACTYPE(NSQ,1) - # OF A/C OF CONFIGURATION 1 IN SQUADRON NSQ,
1951      NACTYPE(NSQ,2) - # OF A/C OF CONFIGURATION 2 IN SQUADRON NSQ,
1952      NACTYPE(NSQ,3) - # OF A/C OF CONFIGURATION 3 IN SQUADRON NSQ.
1953      C
1954      C
1955      7300 NSQ = ATRIB(1)
1956      C
1957      C
1958      C IF A/C IS REFUELED AND READY TO GO THEN THE A/C IS
1959      C NOT RECONFIGURED UNLESS IT HAS LESS TANKS THAN ITS
1960      C SQUADRON REQUIRES FOR MAXCONF(NSQ).
1961      C
1962      C
1963      IF(ATRIB(15).EQ.0.0.AND.ATRIB(14).LT.CNDMAX) THEN
1964          IF(ATRIB(12).GE.MAXCONF(NSQ))THEN
1965              USERF = ATRIB(12)
1966              NC = ATRIB(12)
1967          ELSE
1968              USERF = MAXCONF(NSQ)
1969              NC = MAXCONF(NSQ)
1970          ENDF
1971          NACTYPE(NSQ,NC) = NACTYPE(NSQ,NC) + 1
1972      C ELSE, THE ROUTINE CHECKS TO SEE IF ALL ODD BALL CONFIGURATIONS
1973      C ARE MATCHED, THEN IT IS ALLOWED TO RECONFIGURE TO THE SPECIFIED
1974      C CONFIGURATION, MAXCONF(NSQ).
1975      ELSEIF(MAXCONF(NSQ).EQ.1) THEN
1976      C MAXIMUM ALLOWED CONFIGURATION FOR THE SQUADRON IS 1, UNLESS
1977      C THERE ARE CONFIGURATION 2 AND/OR 3 A/C ALREADY IN THE
1978      C READY POOL OF SQUADRON NSQ.
1979      C
1980      IF(NACTYPE(NSQ,3).EQ.2) THEN
1981          USERF = 3.0
1982          NACTYPE(NSQ,3) = NACTYPE(NSQ,3) + 1
1983      ELSEIF(NACTYPE(NSQ,2).EQ.2) THEN
1984          USERF = 2.0
1985          NACTYPE(NSQ,2) = NACTYPE(NSQ,2) + 1
1986      ELSEIF(NACTYPE(NSQ,3).EQ.1) THEN
1987          USERF = 3.0
1988          NACTYPE(NSQ,3) = NACTYPE(NSQ,3) + 1
1989      ELSEIF(NACTYPE(NSQ,2).EQ.1) THEN
1990          USERF = 2.0
1991          NACTYPE(NSQ,2) = NACTYPE(NSQ,2) + 1
1992      ELSEIF(ATRIB(12).EQ.1.OR.ATRIB(12).EQ.2) THEN

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1993          USERF = ATRIB(12)
1994          NACTYPE(NSQ,IFIX(ATRIB(12)))=NACTYPE(NSQ,IFIX(ATRIB(12)))+1
1995      ELSE
1996          USERF = 1.0
1997          NACTYPE(NSQ,1) = NACTYPE(NSQ,1) + 1
1998      ENDIF
1999      C
2000      ELSEIF(MAXCONF(NSQ).EQ.2) THEN
2001      C          MAX SPECIFIED CONFIGURATION FOR SQUADRON NSQ IS 2.
2002      C
2003          IF(NACTYPE(NSQ,3).EQ.2) THEN
2004              USERF = 3.0
2005              NACTYPE(NSQ,3) = NACTYPE(NSQ,3) + 1
2006          ELSEIF(NACTYPE(NSQ,1).EQ.2) THEN
2007              USERF = 1.0
2008              NACTYPE(NSQ,1) = NACTYPE(NSQ,1) + 1
2009          ELSEIF(NACTYPE(NSQ,3).EQ.1) THEN
2010              USERF = 3.0
2011              NACTYPE(NSQ,3) = NACTYPE(NSQ,3) + 1
2012          ELSEIF(NACTYPE(NSQ,1).EQ.1) THEN
2013              USERF = 1.0
2014              NACTYPE(NSQ,1) = NACTYPE(NSQ,1) + 1
2015          ELSE
2016              USERF = 2.0
2017              NACTYPE(NSQ,2) = NACTYPE(NSQ,2) + 1
2018          ENDIF
2019      C
2020      ELSE
2021      C          MAX SPECIFIED CONFIGURATION FOR SQUADRON NSQ IS 3.
2022      C
2023          IF(NACTYPE(NSQ,2).EQ.2) THEN
2024              USERF = 2.0
2025              NACTYPE(NSQ,2) = NACTYPE(NSQ,2) + 1
2026          ELSEIF(NACTYPE(NSQ,1).EQ.2) THEN
2027              USERF = 1.0
2028              NACTYPE(NSQ,1) = NACTYPE(NSQ,1) + 1
2029          ELSEIF(NACTYPE(NSQ,2).EQ.1) THEN
2030              USERF = 2.0
2031              NACTYPE(NSQ,2) = NACTYPE(NSQ,2) + 1
2032          ELSEIF(NACTYPE(NSQ,1).EQ.1) THEN
2033              USERF = 1.0
2034              NACTYPE(NSQ,1) = NACTYPE(NSQ,1) + 1
2035          ELSE
2036              USERF = 3.0
2037              NACTYPE(NSQ,3) = NACTYPE(NSQ,3) + 1
2038          ENDIF
2039      ENDIF
2040      C
2041      RETURN
2042      C

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2043      C
2044      C  FUNCTION USERF(74)
2045      C  DETERMINE LENGTH OF TIME REQUIRED TO ALTER CONFIGURATION.
2046      7400 NC = ATRIB(8)
2047      C  CALCULATE THE NUMBER OF TANKS THE A/C HAD.
2048      NEWTKS = NOCENT(NC) + NOWING(NC)
2049      C
2050      C  CALCULATE THE NUMBER OF NEW TANKS DESIRED.
2051      NC = ATRIB(12)
2052      IF(NC.EQ.0) THEN
2053          NODTKS = 0
2054      ELSE
2055          NODTKS = NOCENT(NC) + NOWING(NC)
2056      ENDIF
2057      C
2058      C  DETERMINE THE TIME REQUIRED TO ALTER THE CONFIGURATION.
2059      IF(NEWTKS.GT.NODTKS) THEN
2060          USERF = (NEWTKS - NODTKS)*UPTIME
2061      ELSE
2062          USERF = (NODTKS - NEWTKS)*DNTIME
2063      ENDIF
2064      C
2065      RETURN
2066      C
2067      C
2068      C
2069      C
2070      C  FUNCTION USERF(75)
2071      C  ROUTINE TO DETERMINE DEARM SERVICE TIME (CONSIDERS WEAPON STATUS)
2072      C  THE TIME IS THE SUM OF THE GUN SERVICING TIME AND BOMB
2073      C  SERVICING TIME.
2074      C
2075      7500 IF(ATRIB(10).LE.1) THEN
2076          XBOMB = TRIAG(DARMNOR(1),DARMNOR(2),DARMNOR(3),3)
2077      ELSE
2078          XBOMB = TRIAG(DARMHUG(1),DARMHUG(2),DARMHUG(3),3)
2079      ENDIF
2080      C
2081      IF(ATRIB(9).LE.1) THEN
2082          XGUN = 0.0
2083      ELSEIF(ATRIB(9).EQ.1) THEN
2084          XGUN = TRIAG(DARMRUN(1),DARMRUN(2),DARMRUN(3),3)
2085      ELSE
2086          XGUN = TRIAG(DARMEXP(1),DARMEXP(2),DARMEXP(3),3)
2087      ENDIF
2088      C
2089      USERF = XBOMB + XGUN
2090      C
2091      RETURN
2092      C

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2093      C
2094      C FUNCTION USERF(76)
2095      C DETERMINE TIME TO REARM A/C; VARIES ACCORDING TO WEAPON STATUS.
2096      C THE TIME IS THE SUM OF BOMB LOADING TIME, GUN LOADING TIME,
2097      C AND TIME TO FIX ANY PROBLEMS. IF THE A/C DOES NOT REQUIRE
2098      C ANY SERVICE FOR ONE OF THE ABOVE, THE TIME FOR THAT ELEMENT
2099      C IS ZERO.
2100      C
2101      7600 IF (ATRI(10).EQ.1) THEN
2102          XBOMB = 0.0
2103      ELSE
2104          XBOMB = TRIAC(RARMNOR(1),RARMNOR(2),RARMNOR(3),3)
2105      ENDIF
2106      C
2107      IF (ATRI(9).EQ.1) THEN
2108          XGUN = 0.0
2109      ELSE
2110          XGUN = TRIAC(RARMGUN(1),RARMGUN(2),RARMGUN(3),3)
2111      ENDIF
2112      C
2113      IF (ATRI(9).GE.2) THEN
2114          XPROB = TRIAC(RARMBCN(1),RARMBCN(2),RARMBCN(3),3)
2115      ELSEIF (ATRI(10).EQ.2) THEN
2116          XPROB = TRIAC(RARMHUG(1),RARMHUG(2),RARMHUG(3),3)
2117      ELSE
2118          XPROB = 0.0
2119      ENDIF
2120      C
2121      ATRI(9) = 1.0
2122      ATRI(10) = 1.0
2123      USERF = XBOMB + XGUN + XPROB
2124      RETURN
2125      C
2126      C
2127      C FUNCTION USERF(77)
2128      C DETERMINE IF A/C ALLOWED TO HOT PIT
2129      C FUNCTION OF A/C LOCATION, SQUADRON NUMBER, AND CONFIGURATION.
2130      C AVAILABILITY OF HOTPIT RESOURCES IS ONLY CONSIDERED AFTER
2131      C THE A/C GETS TO THE HOTPIT.
2132      7700 USERF = 0.0
2133      C
2134      NSQ = NCSQ(IFIX(ATRI(2)))
2135      IF (ATRI(3).NE.1.AND.ATRI(12).LE.MAXCONF(NSQ).AND.
2136      + NUMRES(40).GT.0.AND.
2137      + (ATRI(1).LE.3.AND.ATRI(13).EQ.7.OR.
2138      + ATRI(1).GT.3.AND.ATRI(13).EQ.10)) USERF = 1.0
2139      C
2140      RETURN
2141      C
2142      C

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2143	C	FUNCTION USERF(78)
2144	C	DETERMINE TIME REQ'D TO REFUEL
2145	C	
2146		7800 USERF =(ATRI(15) * 1388.0)/TRIAC(REFRAT(1),REFRAT(2),REFRAT(3),3)
2147		RETURN
2148	C	
2149	C	
2150	C	END OF SECTION 7, TURNAROUND.
2151	C	
2152	C	
2153	C	

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2154      C      *****
2155      C      SECTION 8, WING SERVICE      -- USERF(81) TO USERF(84)
2156      C      *****
2157      C      8000 CONTINUE
2158      C
2159      C      WING SERVICE FIXES LEVEL 4 AND LEVEL 5 PROBLEMS.  IT
2160      C      ASSUMES THAT THE LEVEL3 AND LEVEL 2 PROBLEMS ARE
2161      C      FIXED CONCURRENTLY WITHOUT ADDITIONAL TIME BEING REQ'D
2162      C      OR ADDITIONAL RESOURCES.
2163      C      GLOSSARY OF VARIABLES:
2164      C      COMMON/UCOMMON/MINI(5),MODE1(5),MAX1(5),MIN2(5),MODE2(5),MAX2(5),
2165      C      MIN3(5),MODE3(5),MAX3(5),MIN4(5),MODE4(5),MAX4(5),
2166      C      MIN5(5),MODE5(5),MAX5(5),MIN6(5),MODE6(5),MAX6(5),
2167      C      WSH1INT(3),WSH3INT(3)
2168      C
2169      C
2170      C      THE SERVICE TIMES ARE A FUNCTION OF WHETHER OR NOT TWO ACTIV-
2171      C      TIES ARE GOING ON AT ONCE.  IF SO, THE TIME IS THE MAXIMUM
2172      C      TIME OF THE TWO PLUS AN INTERFERENCE TIME BECAUSE OF THE CON-
2173      C      CURRENT ACTIVITIES.  IF NOT, THE TIME IS THE LENGTH OF TIME
2174      C      REQUIRED TO FIX THE ONE PROBLEM.
2175      C
2176      C      NFUNC = MOD(IFN,10)
2177      C      GO TO (8100,8200,8300,8400),NFUNC
2178      C
2179      C
2180      C
2181      C      FUNCTION USERF(81)
2182      C      SERVICE TIME OF SHOP ONE.
2183      C
2184      C      8100 NCODE = ATRIB(18)
2185      C      LEVSY3 = MOD(NCODE,10000)/1000
2186      C      LEVSY4 = MOD(NCODE,1000)/100
2187      C
2188      C      IF(LEVSY3.GE.4) THEN
2189      C          F3 = TRIAC(MIN3(LEVSY3),MODE3(LEVSY3),MAX3(LEVSY3),3)
2190      C      ELSE
2191      C          F3 = 0.0
2192      C      ENDIF
2193      C
2194      C      IF(LEVSY4.GE.4) THEN
2195      C          F4 = TRIAC(MIN4(LEVSY4),MODE4(LEVSY4),MAX4(LEVSY4),3)
2196      C      ELSE
2197      C          F4 = 0.0
2198      C      ENDIF
2199      C
2200      C      IF(F3.GE.F4.AND.F4.NE.0.0)THEN
2201      C          USERF = F3 + TRIAC(WSH1INT(1),WSH1INT(2),WSH1INT(3),3)
2202      C      ELSEIF(F4.GE.F3.AND.F3.NE.0.0)THEN
2203      C          USERF = F4 + TRIAC(WSH1INT(1),WSH1INT(2),WSH1INT(3),3)

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2204         ELSE
2205             USERF = F3 + F4
2206         ENDIF
2207     C
2208     RETURN
2209 C     FUNCTION USERF(82)
2210 C     SERVICE TIME OF WING SHOP TWO.
2211 C
2212 C
2213     8200 NCODE = ATRIB(18)
2214     LEVSYS2 = MOD(NCODE,100000)/10000
2215 C
2216     IF(LEVSYS2.GE.4) THEN
2217         USERF = TRIAC(MIN2(LEVSYS2),MODE2(LEVSYS2),MAX2(LEVSYS2),3)
2218     ELSE
2219         USERF = 0.0
2220     ENDIF
2221 C
2222     RETURN
2223 C
2224 C
2225 C
2226 C     FUNCTION USERF(83)
2227 C     SERVICE TIME OF WING SHOP THREE.
2228 C
2229     8300 NCODE = ATRIB(18)
2230     LEVSYS1 = MOD(NCODE,1000000)/100000
2231     LEVSYS5 = MOD(NCODE,100)/10
2232 C
2233     IF(LEVSYS1.GE.4) THEN
2234         F1 = TRIAC(MIN1(LEVSYS1),MODE1(LEVSYS1),MAX1(LEVSYS1),3)
2235     ELSE
2236         F1 = 0.0
2237     ENDIF
2238 C
2239     IF(LEVSYS5.GE.4) THEN
2240         F5 = TRIAC(MIN5(LEVSYS5),MODE5(LEVSYS5),MAX5(LEVSYS5),3)
2241     ELSE
2242         F5 = 0.0
2243     ENDIF
2244 C
2245     IF(F1.GE.F5.AND.F5.GT.0.0) THEN
2246         USERF = F1 + TRIAC(WSH3INT(1),WSH3INT(2),WSH3INT(3),3)
2247     ELSEIF(F5.GE.F1.AND.F1.GT.0.0) THEN
2248         USERF = F5 + TRIAC(WSH3INT(1),WSH3INT(2),WSH3INT(3),3)
2249     ELSE
2250         USERF = F1 + F5
2251     ENDIF
2252 C
2253     RETURN

```

```

2254      C
2255      C
2256      C
2257      C   FUNCTION USERF(84)
2258      C   SERVICE TIME OF WIND SHOP FOUR.
2259      8400 NCODE = ATRIB(18)
2260      LEVSYS6 = MOD(NCODE,10)
2261      C
2262      IF (LEVSYS6.GE.4) THEN
2263          USERF = TRIAG(MIN6(LEVSYS6),MODE6(LEVSYS6),MAX6(LEVSYS6),3)
2264      ELSE
2265          USERF = 0.0
2266      ENDIF
2267      C
2268      RETURN
2269      C
2270      C
2271      C   END OF SECTION 8, WING SERVICE.
2272      C
2273      C
2274      C

```

```

2275      C      *****
2276      C      SECTION 9, MMT SERVICE -- USERF(91) TO USERF(96)
2277      C      *****
2278      9000 CONTINUE
2279      C
2280      C      MMT FIXES ONLY LEVEL 4 AND LEVEL 5 PROBLEMS.
2281      C      GLOSSARY OF VARIABLES:
2282      C      COMMON/UCOM9/MMTMIN(6,2),MMTMOD(6,2),MMTMAX(6,2)
2283      C
2284      C      END OF GLOSSARY
2285      C
2286      NFUNC = MOD(IFN,10)
2287      GO TO(9100,9200,9300,9400,9500,9600),NFUNC
2288      C
2289      C
2290      C      FUNCTION USERF(91)
2291      C      SERVICE TIME FOR MMT ONE.
2292      C
2293      9100 NCODE = ATRIB(10)
2294      L = NCODE/100000
2295      IF(L.GE.4) THEN
2296      L = L - 3
2297      USERF = TRIAC(MMTMIN(1,L),MMTMOD(1,L),MMTMAX(1,L),3)
2298      ELSE
2299      USERF = 0.0
2300      ENDIF
2301      C
2302      RETURN
2303      C
2304      C
2305      C
2306      C      FUNCTION USERF(92)
2307      C      SERVICE TIME FOR MMT TWO.
2308      C
2309      9200 NCODE = ATRIB(10)
2310      L = MOD(NCODE,100000)/10000
2311      IF(L.GE.4) THEN
2312      L = L - 3
2313      USERF = TRIAC(MMTMIN(2,L),MMTMOD(2,L),MMTMAX(2,L),3)
2314      ELSE
2315      USERF = 0.0
2316      ENDIF
2317      C
2318      RETURN
2319      C
2320      C
2321      C
2322      C      FUNCTION USERF(93)
2323      C      SERVICE TIME FOR MMT THREE.
2324      C

```

```

2325          9300 NCODE = ATRIB(18)
2326          L = MOD(NCODE,10000)/1000
2327          IF(L.GE.4) THEN
2328              L = L - 3
2329              USERF = TRIAC(MMTMIN(3,L),MMTMOD(3,L),MMTMAX(3,L),3)
2330          ELSE
2331              USERF = 0.0
2332          ENDIF
2333      C
2334      RETURN
2335      C
2336      C
2337      C FUNCTION USERF(94)
2338      C SERVICE TIME FOR MMT FOUR.
2339      C
2340      C
2341          9400 NCODE = ATRIB(18)
2342          L = MOD(NCODE,1000)/100
2343          IF(L.GE.4) THEN
2344              L = L - 3
2345              USERF = TRIAC(MMTMIN(4,L),MMTMOD(4,L),MMTMAX(4,L),3)
2346          ELSE
2347              USERF = 0.0
2348          ENDIF
2349      C
2350      RETURN
2351      C
2352      C
2353      C
2354      C FUNCTION USERF(95)
2355      C SERVICE TIME FOR MMT FIVE.
2356      C
2357          9500 NCODE = ATRIB(18)
2358          L = MOD(NCODE,100)/10
2359          IF(L.GE.4) THEN
2360              L = L - 3
2361              USERF = TRIAC(MMTMIN(5,L),MMTMOD(5,L),MMTMAX(5,L),3)
2362          ELSE
2363              USERF = 0.0
2364          ENDIF
2365      C
2366      RETURN
2367      C
2368      C
2369      C
2370      C FUNCTION USERF(96)
2371      C SERVICE TIME FOR MMT SIX.
2372      C
2373          9600 NCODE = ATRIB(18)
2374          L = MOD(NCODE,10)

```

```

2375             IF(L.GE.4) THEN
2376                 L = L - 3
2377                 USERF = TRIAC(MMTMIN(6,L),MMTMOD(6,L),MMTMAX(6,L),3)
2378             ELSE
2379                 USERF = 0.0
2380             ENDIF
2381         C
2382         RETURN
2383     C
2384     C
2385     C     END OF SECTION 9, MMT SERVICE.
2386     C
2387     C
2388     C

```

```

2389          C *****
2390          C SECTION 10: SQUADRON SERVICE -- USERF(101) TO USERF(104)
2391          C *****
2392          10000 CONTINUE
2393          C
2394          C GLOSSARY OF VARIABLES:
2395          C COMMON/UCOMS/MIN1(5),MODE1(5),MAX1(5),MIN2(5),MODE2(5),MAX2(5)
2396          C ,MIN3(5),MODE3(5),MAX3(5),MIN4(5),MODE4(5),MAX4(5)
2397          C ,MIN5(5),MODE5(5),MAX5(5),MIN6(5),MODE6(5),MAX6(5)
2398          C ,WSH1INT(3),WSH2INT(3)
2399          C
2400          C COMMON/UCOM10/MIN1(5),MODE1(5),MAX1(5)
2401          C
2402          C FIXES ONLY TWO AND THREE LEVEL PROBLEMS, BUT THE
2403          C SERVICE IS PERFORMED CONCURRENTLY FOR ALL SHOPS
2404          C (IE ALL SYSTEMS). IF TWO SYSTEMS ARE IN THE
2405          C SAME SHOP, A MAX TIME IS USED, PLUS AN INTERFERENCE TIME
2406          C FROM ALL OTHER SYSTEMS BEING WORKED ON CONCURRENTLY.
2407          C
2408          C
2409          C
2410          C NFUNC = MOD(IFN,10)
2411          C GO TO(10100,10200,10300,10400),NFUNC
2412          C
2413          C
2414          C FUNCTION USERF(101)
2415          C SERVICE TIME FOR SQUADRON SHOP ONE.
2416          C
2417          10100 NCODE = ATTRIB(10)
2418          NINT = 0
2419          NDIV = 1000000
2420          C
2421          DO 10120 I = 1,6
2422          NCODE = MOD(NCODE,NDIV)
2423          NDIV = NDIV/10
2424          LEV(I) = NCODE/NDIV
2425          IF(I.NE.3.AND.I.NE.4.AND.
2426          & (LEV(1).EQ.2.OR.LEV(1).EQ.3)) NINT = NINT + 1
2427          10120 CONTINUE
2428          C
2429          IF(LEV(3).EQ.2.OR.LEV(3).EQ.3) THEN
2430          F3 = TRIAC(MIN3(LEV(3)),MODE3(LEV(3)),MAX3(LEV(3)),3)
2431          ELSE
2432          F3 = 0.0
2433          ENDIF
2434          C
2435          IF(LEV(4).EQ.2.OR.LEV(4).EQ.3) THEN
2436          F4 = TRIAC(MIN4(LEV(4)),MODE4(LEV(4)),MAX4(LEV(4)),3)
2437          ELSE
2438          F4 = 0.0

```

```

2439          ENDIF
2440      C
2441      IF (F3.GT.F4) THEN
2442          FTEMP = F3
2443      ELSE
2444          FTEMP = F4
2445      ENDIF
2446      C
2447      IF (NINT.EQ.0.OR.FTEMP.EQ.0.0) THEN
2448          USERF = FTEMP
2449      ELSE
2450          USERF = FTEMP + TRIAC(MINI(NINT),MODEI(NINT),MAXI(NINT),3)
2451      ENDIF
2452      C
2453      RETURN
2454      C
2455      C
2456      FUNCTION USERF(102)
2457      C      SERVICE TIME FOR SQUADRON SHOP TWO.
2458      C
2459      C
2460      10200 NCODE = ATRIB(18)
2461          NINT = 0
2462          NDIV = 1000000
2463      C
2464      DO 10220 I = 1,6
2465          NCODE = MOD(NCODE,NDIV)
2466          NDIV = NDIV/10
2467          LEV(I) = NCODE/NDIV
2468      C
2469          IF (I.NE.2.AND.(LEV(1).EQ.2.OR.LEV(I).EQ.3)) NINT = NINT + 1
2470      10220 CONTINUE
2471      C
2472      IF (LEV(2).EQ.2.OR.LEV(2).EQ.3) THEN
2473          F2 = TRIAC(MIN2(LEV(2)),MODE2(LEV(2)),MAX2(LEV(2)),3)
2474      ELSE
2475          F2 = 0.0
2476      ENDIF
2477      C
2478      IF (NINT.EQ.0.OR.F2.EQ.0.0) THEN
2479          USERF = F2
2480      ELSE
2481          USERF = F2 + TRIAC(MINI(NINT),MODEI(NINT),MAXI(NINT),3)
2482      ENDIF
2483      C
2484      RETURN
2485      C
2486      C
2487      FUNCTION USERF(103)
2488      C      SERVICE TIME FOR SQUADRON SHOP THREE.

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2489      C
2490      10300 NCODE = ATRIB(18)
2491      NINT = 0
2492      NDIV = 1000000
2493      C
2494      DO 10320 I = 1,6
2495      NCODE = MOD(NCODE,NDIV)
2496      NDIV = NDIV/10
2497      LEV(I) = NCODE/NDIV
2498      IF(I.NE.1.AND.I.NE.5.AND.
2499      &      (LEV(I).EQ.2.OR.LEV(I).EQ.3)) NINT = NINT + 1
2500      10320 CONTINUE
2501      C
2502      IF(LEV(1).EQ.2.OR.LEV(1).EQ.3) THEN
2503      F1 = TRIAC(MIN1(LEV(1)),MODE1(LEV(1)),MAX1(LEV(1)),3)
2504      ELSE
2505      F1 = 0.0
2506      ENDIF
2507      C
2508      IF(LEV(5).EQ.2.OR.LEV(5).EQ.3) THEN
2509      F5 = TRIAC(MIN5(LEV(5)),MODE5(LEV(5)),MAX5(LEV(5)),3)
2510      ELSE
2511      F5 = 0.0
2512      ENDIF
2513      C
2514      IF(F1.GT.F5) THEN
2515      FTEMP = F1
2516      ELSE
2517      FTEMP = F5
2518      ENDIF
2519      C
2520      IF(NINT.EQ.0.OR.FTEMP.EQ.0.0) THEN
2521      USERF = FTEMP
2522      ELSE
2523      USERF = FTEMP + TRIAC(MIN1(NINT),MODE1(NINT),MAX1(NINT),3)
2524      ENDIF
2525      C
2526      RETURN
2527      C
2528      C
2529      FUNCTION USERF(104)
2530      SERVICE TIME FOR SQUADRON SHOP FOUR.
2531      C
2532      C
2533      C
2534      10400 NCODE = ATRIB(18)
2535      NINT = 0
2536      NDIV = 1000000
2537      C
2538      DO 10420 I = 1,6

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```

2539          NCODE = MOD(NCODE,NDIV)
2540          NDIV = NDIV/10
2541          LEV(I)= NCODE/NDIV
2542      C
2543          IF(I.NE.6.AND.(LEV(I).EQ.2.OR.LEV(I).EQ.3)) NINT = NINT + 1
2544      10420 CONTINUE
2545      C
2546          IF(LEV(6).EQ.2.OR.LEV(6).EQ.3) THEN
2547              F6 = TRIAG(MIN6(LEV(6)),MODE6(LEV(6)),MAX6(LEV(6)),3)
2548          ELSE
2549              F6 = 0.0
2550          ENDIF
2551      C
2552          IF(NINT.EQ.0.OR.F6.EQ.0.0) THEN
2553              USERF = F6
2554          ELSE
2555              USERF = F6 + TRIAG(MIN1(NINT),MODE1(NINT),MAX1(NINT),3)
2556          ENDIF
2557      C
2558          RETURN
2559      C
2560      C
2561      C
2562      C
2563      C      END OF SECTION 10, SQUADRON SERVICE.
2564      C
2565      C
2566      C

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2567      C      *****
2568      C      SECTION 11, MAINTENANCE CONTROL -- USERF(111) TO USERF(113)
2569      C      *****
2570      11000 CONTINUE
2571      C
2572      C      GLOSSARY OF VARIABLES USED IN THIS SECTION
2573      C
2574      C      SLAM FUNCTIONS:
2575      C      NNRSC - DETERMINE AMOUNT OF RESOURCE AVAILABLE
2576      C      (1) - WQSHOP1 RESOURCE
2577      C      (2) - WQSHOP2 RESOURCE
2578      C      (3) - WQSHOP3 RESOURCE
2579      C      (4) - WQSHOP4 RESOURCE
2580      C      (5) - MMT1 RESOURCE
2581      C      (6) - MMT2 RESOURCE
2582      C      (7) - MMT3 RESOURCE
2583      C      (8) - MMT4 RESOURCE
2584      C      (9) - MMT5 RESOURCE
2585      C      (10) - MMT6 RESOURCE
2586      C
2587      C      INTEGER VALUE FUNCTIONS:
2588      C      NFUNC - DETERMINE WHICH FUNCTION TO ACCESS.
2589      C      N - CODED MX FAILURE CODE.
2590      C
2591      C      END OF GLOSSARY.
2592      C
2593      NFUNC = MOD(IFN,10)
2594      GO TO (11100,11200,11300),NFUNC
2595      C
2596      C
2597      C      FUNCTION USERF(111)
2598      C      DETERMINE IF ENTITY REQUIRES WING SERVICE AND IF IT'S AVAILABLE.
2599      C      IF SO, RETURN 1, ELSE RETURN 0.
2600      C
2601      11100 USERF = 0.0
2602      N = ATTRIB(18)
2603      IF (N/100000.GE.4.AND.NNRSC(3).GT.0.OR.
2604      + MOD(N,100000)/10000.GE.4.AND.NNRSC(2).GT.0.OR.
2605      + MOD(N,10000)/1000.GE.4.AND.NNRSC(1).GT.0.OR.
2606      + MOD(N,1000)/100.GE.4.AND.NNRSC(1).GT.0.OR.
2607      + MOD(N,100)/10.GE.4.AND.NNRSC(3).GT.0.OR.
2608      + MOD(N,10).GE.4.AND.NNRSC(4).GT.0) USERF = 1.0
2609      RETURN
2610      C
2611      C
2612      C      FUNCTION USERF(112)
2613      C      DETERMINE IF A/C REQUIRES MMT IF IT IS AVAILABLE.
2614      C      IF SO, RETURN 1, ELSE RETURN 0.
2615      C
2616      11200 USERF = 0.0

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```

2617      N      = ATRIB(18)
2618      IF(N/100000 .GE.4.AND.NNRSC(5).GT.0.OR.
2619      + MOD(N,100000)/10000.GE.4.AND.NNRSC(6).GT.0.OR.
2620      + MOD(N,10000)/1000 .GE.4.AND.NNRSC(7).GT.0.OR.
2621      + MOD(N,1000)/100 .GE.4.AND.NNRSC(8).GT.0.OR.
2622      + MOD(N,100)/10 .GE.4.AND.NNRSC(9).GT.0.OR.
2623      + MOD(N,10) .GE.4.AND.NNRSC(10).GT.0) USERF = 1.0
2624      RETURN
2625      C
2626      C
2627      C      FUNCTION USERF(113)
2628      C      DETERMINE IF OPENING AVAILABLE IN WING MX FOR A/C WAITING ON MMT.
2629      C
2630      11300 N      = ATRIB(18)
2631      USERF = 0.0
2632      IF(XX(93).EQ.0.AND.
2633      + (NNRSC(3).GT.0.AND. N/100000.GE.4 .OR.
2634      + NNRSC(2).GT.0.AND. MOD(N,100000)/10000.GE.4.OR.
2635      + NNRSC(1).GT.0.AND. MOD(N,10000)/1000.GE.4.OR.
2636      + NNRSC(1).GT.0.AND. MOD(N,1000)/100.GE.4.OR.
2637      + NNRSC(3).GT.0.AND. MOD(N,100)/10.GE.4.OR.
2638      + NNRSC(4).GT.0.AND. MOD(N,10).GE.4)) USERF = 1.0
2639      RETURN
2640      C
2641      C
2642      C      END OF SECTION 11, MAINTENANCE CONTROL.
2643      C

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2644      C      *****
2645      C      SECTION 12, STATISTICS -- USERF(121) TO USERF(125)
2646      C      *****
2647      C
2648      12000 CONTINUE
2649      C
2650      NFUNC = MOD(IFN,10)
2651      GO TO(12100,12200,12300,12400,12500),NFUNC
2652      C
2653      C      FUNCTION USERF(121)
2654      C      INCREMENT NUMBER OF SORTIES FOR A/C AND PILOT BY DAY.
2655      C
2656      C
2657      12100 IF(TNOW.LT.1440.0) THEN
2658          ATRIB(4) = ATRIB(4) + 1
2659          ATRIB(34) = ATRIB(34) + 1
2660      ELSEIF(TNOW.LT.2880.0) THEN
2661          ATRIB(5) = ATRIB(5) + 1
2662          ATRIB(35) = ATRIB(35) + 1
2663      ELSE
2664          ATRIB(6) = ATRIB(6) + 1
2665          ATRIB(36) = ATRIB(36) + 1
2666      ENDIF
2667      C
2668      USERF = 0.0
2669      RETURN
2670      C
2671      C
2672      C      FUNCTION USERF(122)
2673      C      MARK CORRECT ATRIB (1 PER DAY) WITH TNOW SO PILOT FLYING TIME
2674      C      STATISTICS CAN BE COLLECTED.
2675      C
2676      12200 IF(TNOW.LT.1440.0) THEN
2677          ATRIB(37) = TNOW
2678      ELSEIF(TNOW.LT.2880.0) THEN
2679          ATRIB(38) = TNOW
2680      ELSE
2681          ATRIB(39) = TNOW
2682      ENDIF
2683      C
2684      USERF = 0.0
2685      RETURN
2686      C
2687      C
2688      C      FUNCTION USERF(123)
2689      C      MARK CORRECT ATRIB (BY DAY) SO TIME BETWEEN PILOT SEPERATION AND
2690      C      NEXT FLIGHT ON SAME DAY CAN BE CALCULATED.
2691      C
2692      12300 IF(TNOW.LT.1440.0) THEN
2693          ATRIB(10) = TNOW

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2694          ELSEIF(TNOW.LT.2880.0) THEN
2695              ATRIB(11) = TNOW
2696          ELSE
2697              ATRIB(12) = TNOW
2698          ENDIF
2699          C
2700          USERF = 0.0
2701          RETURN
2702          C
2703          C
2704          C      FUNCTION USERF(124)
2705          C      CALCULATE TOTAL A/C OPERATING TIME PER DAY
2706          C
2707          12400 IF(TNOW.LT.1440.0) THEN
2708              ATRIB(28) = ATRIB(7)
2709              ELSEIF(TNOW.LT.2880.0) THEN
2710                  ATRIB(29) = ATRIB(7) - ATRIB(28)
2711              ELSE
2712                  ATRIB(30) = ATRIB(7) - ATRIB(28) - ATRIB(29)
2713              ENDIF
2714              C
2715              USERF = 0.0
2716              RETURN
2717              C
2718              C
2719              C      FUNCTION USERF(125)
2720              C      MARK CORRECT ATRIB (1 PER DAY) TO TNOW FOR MK AND SERVICE
2721              C      TURNAROUND TIME.
2722              C
2723              12500 IF(TNOW.LT.1440.0) THEN
2724                  ATRIB(25) = TNOW
2725                  ELSEIF(TNOW.LT.2880.0) THEN
2726                      ATRIB(26) = TNOW
2727                  ELSE
2728                      ATRIB(27) = TNOW
2729                  ENDIF
2730                  C
2731                  USERF = 0.0
2732                  RETURN
2733                  C
2734                  C
2735                  C      END OF SECTION 12, STATISTICS.
2736                  C
2737                  C
2738                  C
2739                  C

```

```

2740      C      *****
2741      C      SECTION 13, MX FAILURE DISTRIBUTIONS -- USERF(131) TO USERF(137)
2742      C      *****
2743      C
2744      13000 CONTINUE
2745      C
2746      NFUNC = MOD(IFN,10)
2747      GOTO(13100,13100,13100,13100,13100,13100,13700),NFUNC
2748      C
2749      C      FUNCTION USERF(131) TO FUNCTION USERF(136)
2750      13100 USERF=(1+BET(NFUNC)/ALP(NFUNC))*MTBF(NFUNC)*
2751      &      BETA(ALP(NFUNC),BET(NFUNC),2)
2752      RETURN
2753      C
2754      C
2755      C
2756      C      FUNCTION USERF(137)
2757      C      UNIFORMLY DISTRIBUTE THE INITIAL ENGINE RUN TIME.
2758      13700 USERF = UNFRN(ERUNMIN,ERUNMAX,2)
2759      RETURN
2760      C
2761      C
2762      C      END OF SECTION 13.
2763      C
2764      C      END
2765      C
2766      C
2767      C
2768      C
2769      C
2770      C
2771      C
2772      C

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2773          SUBROUTINE EVENT(IEV)
2774          COMMON/SCOM1/ATRIB(100),DD(100),DDL(100),DTNOW,II,MFA,MSTOP,NCLNR
2775          &,NCRDR,NPRNT,NNRUN,NNSET,NTAPE,SS(100),SSL(100),TNEXT,TNOW,XX(100)
2776          COMMON QSET(1)
2777          COMMON/PFLAG/MAXPRT,LEVPRT,BPRT,EPRT
2778          C
2779          COMMON/SCHEDLR/NCAGLE(3,2),DELAY(3,2),SRATE(3)
2780          COMMON/MSNREQ /INITAC(3),REQPCT(3),LIMITAC,ACTIVE(6)
2781          COMMON/STATS /MAXCONF(6),NACTYPE(6,3),NCSQ(300),MSNRQAZ,MSNFLW(3)
2782          COMMON/LOCAL /PRIORITY(6),NCAGCNT(2)
2783          COMMON/CLOCK /INTDARK,DUSK(3),DAYLIGHT(3),MAJEVNT(13,2)
2784          C
2785          COMMON/UCOM2/NPARK(6,50,2),NTYPE(6,3)
2786          C
2787          REAL A(50),MAJEVNT
2788          INTEGER PRIORITY,NAVAIL(6),NSET(1),LOSTFTL(6)
2789          EQUIVALENCE (NSET(1),QSET(1))
2790          LOGICAL FORMED,REQSUPY(6),DAYTIME,ACTIVE,INTDARK
2791          C
2792          C NIGHT/DAY CLOCK
2793          IF(INTDARK)THEN
2794              DAYTIME = .FALSE.
2795              DO 10 I = 1,3
2796                  IF(TNOW.GE.DAYLIGHT(I).AND.TNOW.LT.DUSK(I))DAYTIME=.TRUE.
2797              10 CONTINUE
2798          ELSE
2799              DAYTIME = .TRUE.
2800              DO 20 I = 1,3
2801                  IF(TNOW.GE.DUSK(I).AND.TNOW.LT.DAYLIGHT(I))DAYTIME=.FALSE.
2802              20 CONTINUE
2803          ENDIF
2804          C
2805          C DAY OF CONFLICT CLOCK
2806          IF(TNOW.LT.1440.0) THEN
2807              NDAY = 1
2808          ELSEIF(TNOW.LT.2880.0) THEN
2809              NDAY = 2
2810          ELSE
2811              NDAY = 3
2812          ENDIF
2813          C
2814          C
2815          C
2816          C
2817          C
2818          IF(LEVPRT.GE.5.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT)THEN
2819              PRINT*,' EVENT ',IEV,' CALLED, TIME ',TNOW,', A/C ',ATRIB(2)
2820          ENDIF
2821          C
2822          IF(IEV.EQ.10)GOTO 1000

```

2823
2824
2825
2826

IF (IEV.EQ.11) GOTO 1100
GO TO (100,200,300,400,500,600,700),IEV

C
C

```

2827      C      *****
2828      C      MAJOR EVENT CLOCK -- EVENT 1.
2829      100 CONTINUE
2830      C      *****
2831      C
2832      C
2833      C      MAJOR EVENT CODES:
2834      C      0 - TERMINATE
2835      C      1 - SCHEDULER
2836      C      2 - NIGHT PARK
2837      C      3 - GRA SWITCH
2838      C      4 - RESUPPLY/RECONFIGURE
2839      C      99- NOTHING
2840      C
2841      C      MAJOR EVENTS MUST BE STORED "IN ORDER" IN MAJEVNT(J,1), WITH TYPE
2842      C      OF EVENT IN MAJEVNT(J,2). MAXIMUM OF 13 EVENTS.
2843      C
2844      XX(98) = 999999.0
2845      XX(96) = 0.0
2846      IF(TNOW.LT.MAJEVNT(1,1))THEN
2847      C      IF EVENT 1 IS CALLED PRIOR TO THE FIRST ACTIVITY, DELAY
2848      C      UNTIL THE FIRST ACTIVITY SHOULD BE CALLED.
2849      XX(98) = MAJEVNT(1,1) - TNOW
2850      XX(96) = 0.0
2851      ELSE
2852      C      FIND THE ACTIVITY BEING CALLED, AND RELEASE THE ENTITY TO
2853      C      INITIATE THAT ACTIVITY.
2854      DO 110 I = 1,13
2855      IF(TNOW.EQ.MAJEVNT(I,1).AND.MAJEVNT(I,2).NE.99.0)THEN
2856      IF(MAJEVNT(I,2).GT.0.0.AND.MAJEVNT(I,2).LE.4.0)THEN
2857      XX(96) = MAJEVNT(I,2)
2858      IF(I.NE.13)XX(98) = MAJEVNT(I+1,1) - TNOW
2859      ELSE
2860      XX(96) = 0.0
2861      ENDIF
2862      MAJEVNT(I,2) = 99.0
2863      ENDIF
2864      110 CONTINUE
2865      ENDIF
2866      RETURN
2867      C

```

```

2868      C      *****
2869      C      INITIALIZE SCHEDULER -- EVENT 2.
2870      C      *****
2871      200 CONTINUE
2872      C
2873      C
2874      C      SET INITIAL ORDER OF SQDNS TO FORM A FLIGHT FROM.
2875      DO 210 I = 1,6
2876          PRIORITY(I) = I
2877      210 CONTINUE
2878      C
2879      NTOTAC = 0
2880      DO 220 I = 1,300
2881          IF(NCSQ(I).GT.0.AND.NCSQ(I).LE.6)NTOTAC = NTOTAC + 1
2882      220 CONTINUE
2883      DO 230 I = 1,6
2884          IF(ACTIVE(I))NTOTAC = NTOTAC - XX(61)
2885      230 CONTINUE
2886      MSNRQAZ = (NTOTAC*SRATE(NDAY)*REQPCT(2)+1.5)/3.0
2887      C
2888      IF(LEVPRT.GE.3.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT)THEN
2889          PRINT*,'-NTOTAC IS ',NTOTAC,' AND MSNRQAZ IS ',MSNRQAZ
2890      ENDIF
2891      C
2892      C      RESET SCHEDULER COUNTERS.
2893      NCAGCNT(1) = 0
2894      NCAGCNT(2) = 0
2895      MSNFW(1) = 0
2896      MSNFW(2) = 0
2897      MSNFW(3) = 0
2898      C
2899      IF(LEVPRT.GE.2.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT)THEN
2900          PRINT*,'*** INITIALIZE SCHEDULER, TIME ',TNOW
2901      ENDIF
2902      C
2903      RETURN
2904      C
2905      C
2906      C
2907      C      *****
2908      C      SCHEDULER -- EVENT 3.
2909      C      *****
2910      300 CONTINUE
2911      C
2912      C
2913      XX(73) = 0.0
2914      XX(95) = 0.0
2915      FORMED = .FALSE.
2916      C
2917      C

```

```

2916      IF(DAYTIME) THEN
2917      C
2920      C      FIRST FORM ALL THE FLIGHTS FOR GAGGLE NUMBER 1 OF NDAY
2921      C      (OR AS MANY FLIGHTS AS THERE ARE AIRCRAFT). THEN SCHEDULE
2922      C      THE DELAY FOLLOWING THE LAUNCH OF THE FIRST GAGGLE.
2923      C
2924      IF(NGAGCNT(1).LT.NGAGLE(NDAY,1)) THEN
2925      NGAGCNT(1) = NGAGCNT(1) + 1
2926      XX(48) = 3.0
2927      XX(97) = 3.0
2928      CALL ORCANPT(PRIORITY,XX(48),NDAY,FORMED,NSQ,XX(49),MFA)
2929      XX(96) = NSQ
2930      IF(.NOT.FORMED) THEN
2931      NGAGCNT(1) = 999999
2932      XX(98) = DELAY(NDAY,1)
2933      XX(96) = 8.0
2934      ENDIF
2935      C
2936      IF(LEVPRT.GE.4.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
2937      IF(FORMED) PRINT*, 'GAGGLE 1:FLT ',NGAGCNT(1), 'OF DAY ',NDAY
2938      ENDIF
2939      C
2940      ELSEIF(NGAGCNT(1).EQ.NGAGLE(NDAY,1).AND.
2941      8      NGAGLE(NDAY,1).NE.0) THEN
2942      NGAGCNT(1) = 999999
2943      XX(98) = DELAY(NDAY,1)
2944      XX(96) = 5.0
2945      C
2946      IF(LEVPRT.GE.4.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
2947      PRINT*, 'DELAY AFTER GAGGLE 1 ON DAY ',NDAY
2948      ENDIF
2949      C
2950      ELSEIF(NGAGCNT(2).LT.NGAGLE(NDAY,2)) THEN
2951      C
2952      C      NEXT FORM ALL THE FLIGHTS REQUIRED FOR THE SECOND GAGGLE
2953      C      FOLLOWED BY ANOTHER DELAY. IF ENOUGH AIRCRAFT ARE NOT
2954      C      AVAILABLE, THEN ONLY THE NUMBER OF POSSIBLE FLIGHTS ARE
2955      C      SENT.
2956      C
2957      NGAGCNT(2) = NGAGCNT(2) + 1
2958      XX(48) = 3.0
2959      XX(97) = 3.0
2960      CALL ORCANPT(PRIORITY,XX(48),NDAY,FORMED,NSQ,XX(49),MFA)
2961      XX(96) = NSQ
2962      IF(.NOT.FORMED) THEN
2963      NGAGCNT(2) = 999999
2964      XX(98) = DELAY(NDAY,2)
2965      XX(96) = 8.0
2966      ENDIF
2967      C

```

```

2968             IF(LEVPRT.GE.4.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT)THEN
2969             IF(FORMED) PRINT*,'GAGGLE 2:FLT ',NGACNT(2),'OF DAY ',NDAY
2970             ENDF
2971             C
2972             ELSEIF(NGACNT(2).EQ.NGAGLE(NDAY,2).AND.
2973             &             NGAGLE(NDAY,2).NE.0)THEN
2974             NGACNT(2) = 999999
2975             XX(98) = DELAY(NDAY,2)
2976             XX(96) = 8.0
2977             C
2978             IF(LEVPRT.GE.4.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT)THEN
2979             PRINT*,'DELAY AFTER GAGGLE 2 ON DAY ',NDAY
2980             ENDF
2981             C
2982             ELSE
2983             C
2984             C             FOLLOWING THE SCHEDULING OF THE GAGGLES TO AREA THREE,
2985             C             SCHEDULE FLIGHTS FOR AREA 2 AS LONG AS POSSIBLE OR AS
2986             C             MANY AS REQUIRED (MSNRQ42).  ONCE NO MORE AREA 2 MISSIONS
2987             C             CAN BE SCHEDULED, AREA 1 MISSIONS ARE SCHEDULED UNTIL
2988             C             NO MORE FLIGHTS CAN BE FORMED.  WHEN AN AIRCRAFT RETURNS
2989             C             TO THE READY POOL, ANOTHER FLIGHT IS FORMED, IF POSSIBLE.
2990             C             IF IT CAN BE FORMED, IT IS SENT TO THE CORRECT AREA,
2991             C             AREA 2 IF MSNRQ42 IS NOT MET, ELSE AREA 1 (THIS ALSO
2992             C             DEPENDS ON THE TANK CONFIGURATION OF THE AIRCRAFT).
2993             C
2994             IF(MSNFLW(2).LT.MSNRQ42) THEN
2995             XX(97) = 2.0
2996             XX(48) = 2.0
2997             CALL ORCANPT(PRIORITY,XX(48),NDAY,FORMED,NSQ,XX(49),MFA)
2998             IF(.NOT.FORMED) THEN
2999             XX(48) = 3.0
3000             CALL ORCANPT(PRIORITY,XX(48),FORMED,NSQ,XX(49),MFA)
3001             ENDF
3002             XX(96) = NSQ
3003             ENDF
3004             C
3005             IF(.NOT.FORMED) THEN
3006             XX(97) = 1.0
3007             XX(48) = 1.0
3008             CALL ORCANPT(PRIORITY,XX(48),NDAY,FORMED,NSQ,XX(49),MFA)
3009             IF(.NOT.FORMED) THEN
3010             XX(48) = 2.0
3011             CALL ORCANPT(PRIORITY,XX(48),NDAY,FORMED,NSQ,XX(49),MFA)
3012             ENDF
3013             IF(.NOT.FORMED) THEN
3014             XX(48) = 3.0
3015             CALL ORCANPT(PRIORITY,XX(48),NDAY,FORMED,NSQ,XX(49),MFA)
3016             ENDF
3017             XX(96) = NSQ

```

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3018             ENDIF
3019 C
3020             IF(.NOT.FORMED) XX(96) = 7.0
3021             ENDIF
3022 C
3023             IF(FORMED) THEN
3024                 XX(47) = XX(47) + 1
3025                 IF(XX(47).GT.46) XX(47) = 1
3026                 NACTYPE(NSQ,IFIX(XX(48)))=NACTYPE(NSQ,IFIX(XX(48))) - 3
3027             ENDIF
3028 C
3029             IF(LEVPRT.GE.3.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT)THEN
3030             IF(FORMED) THEN
3031                 PRINT*,'-MSN',XX(47),' GOING TO',XX(97),' WITH TANKS',XX(48)
3032             ELSE
3033                 PRINT*,' NOT FORMED'
3034             ENDIF
3035             ENDIF
3036 C
3037             ELSE
3038 C
3039             THE ABOVE SCHEDULING PROCEDURES ARE FOLLOWED UNTIL NIGHT
3040             FALL, WHEN THE SCHEDULING OF MISSIONS IS ENDED.
3041 C
3042             XX(96) = 0.0
3043 C
3044             ENDIF
3045 C
3046 C
3047 C     ONCE THE QUOTAS FOR AREA 3 AND AREA 2 MISSIONS ARE MET,
3048 C     CHANGE THE SPECIFIED CONFIGURATION OF A SQUADRON SO
3049 C     SUBROUTINE RECONFIGURE, USERF(73), CAN MAKE INTELLIGENT
3050 C     DECISIONS ON WHETHER OR NOT TO RECONFIGURE AN AIRCRAFT.
3051 C
3052             IF(MSNFLW(2).GE.MSNRQA2)THEN
3053                 DO 320 I = 1,6
3054                     MAXCONF(I) = 1
3055             320             CONTINUE
3056             ELSEIF(NGACLE(NDAY,1).EQ.0.AND.NGACLE(NDAY,2).EQ.0.OR.
3057             & NGACNT(1).EQ.999999.AND.NGACNT(2).EQ.0.OR.
3058             & NGACNT(2).EQ.999999)THEN
3059                 DO 340 I = 1,6
3060                     IF(MAXCONF(I).EQ.3)MAXCONF(I) = 2
3061             340             CONTINUE
3062             ENDIF
3063 C
3064             RETURN
3065 C
3066 C
3067 C

```

```

3068      C      *****
3069      C      INITIAL NIGHT PARK -- EVENT 4.
3070      C      *****
3071      400 CONTINUE
3072      C
3073      C
3074      C      PERFORM THE INITIAL NIGHT PARKING. MOVE ALL AIRCRAFT NOT
3075      C      PARKED IN A SHELTER TO A SHELTER (TWO A/C TO A SHELTER,
3076      C      EXCEPT QRA SHELTERS). THIS RULE APPLIES TO ALL AIRCRAFT
3077      C      EXCEPT THOSE IN MAINTENANCE. WHEN A MAINTENANCE
3078      C      AIRCRAFT RETURNS TO THE SQUADRON AREA, THE NEXT ROUTINE -
3079      C      EVENT 5 - TRIES TO PARK IT IN A SHELTER.
3080      C
3081      C      CALL NIGHTPK(1,NPARK,NTYPE)
3082      C
3083      C      IF(LEVPRT.GE.2.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
3084      C          PRINT*,'*** INITIAL NIGHT PARK, TIME ',TNOW
3085      C      ENDIF
3086      C
3087      C      RETURN
3088      C
3089      C
3090      C
3091      C      *****
3092      C      FOLLOW-ON NIGHT PARKING -- EVENT 5.
3093      C      *****
3094      500 CONTINUE
3095      C
3096      C
3097      C      XX(96) = 0.0
3098      C      IF(.NOT.DAYTIME) THEN
3099      C          XX(96) = 1.0
3100      C          CALL NIGHTPK(2,NPARK,NTYPE)
3101      C      ENDIF
3102      C
3103      C      IF(LEVPRT.GE.3.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
3104      C          PRINT*,'-FINISHED NIGHTPK(2)'
3105      C      ENDIF
3106      C
3107      C      RETURN
3108      C
3109      C
3110      C

```

```

3111      C      *****
3112      C      QRA CHANGE OVER  --  EVENT 6.
3113      C      *****
3114      C      600  CONTINUE
3115      C
3116      C
3117      C      CHANGE OVER OF THE QRA PILOTS FOR ALL THE SQUADRONS.  ALSO,
3118      C      IF A REPLACEMENT SQUADRON ARRIVED DURING THE DAY, TAKE THE
3119      C      OLD SQUADRONS AIRCRAFT OFF QRA AND DISPERSE, AND PUT THE
3120      C      REPLACEMENTS AIRCRAFT ON QRA.
3121      C
3122      C      CALL QRASWCH(NCSQ,NPARK)
3123      C
3124      C      IF(LEVPRT.GE.2.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
3125      C          PRINT*,'*** QRA CHANGE OVER,  TIME ',TNOW
3126      C      ENDIF
3127      C
3128      C      RETURN
3129      C
3130      C
3131      C

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3132      C      *****
3133      C      RESUPPLY AND RECONFIGURATION  --  EVENT 7.
3134      C      *****
3135      700  CONTINUE
3136      C
3137      C
3138      700  DO 710 I = 1,6
3139           LOSTFTL(I) = 0
3140           NAVAIL(I) = 0
3141      710  CONTINUE
3142      C
3143      C      DISPLAY THE JUNK FILE (IF SPECIFIED) AND CALCULATE THE NUMBER
3144      C      OF FLIGHT LEADS LOST PER SQUADRON.
3145      C
3146           IF (LEVPRT.GE.1.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
3147               PRINT*, '*****      ***'
3148               PRINT*, ' JUNK FILE'
3149           ENDIF
3150      C
3151           IF (NNQ(99).NE.0) THEN
3152               IF (LEVPRT.GE.1.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
3153                   PRINT*, ' SQDN  TAIL  FAILURE  BATTLE  PILOT '
3154               ENDIF
3155               DO 720 I = 1, NNQ(99)
3156                   L = LOCAT(I,99)
3157           C
3158                   IF (LEVPRT.GE.1.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
3159                       PRINT 711, QSET(L+1), QSET(L+2), QSET(L+18), QSET(L+16),
3160                           QSET(L+32)
3161                   ENDIF
3162           711  FORMAT(' ', 5(F7.0,1X))
3163           C
3164                   NSQ = QSET(L+1)
3165                   NPL = QSET(L+32)
3166                   NST = QSET(L+33)
3167                   IF (NPL.NE.0.AND.NST.GT.0) LOSTFTL(NSQ) = LOSTFTL(NSQ) + 1
3168           720  CONTINUE
3169           ENDIF
3170      C
3171           IF (LEVPRT.GE.3.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
3172               PRINT*, '-FLT LEADS LOST BY SQDN: ', (LOSTFTL(I), I=1,6)
3173           ENDIF
3174      C
3175           CALL RESUPLY(ACTIVE, NCSQ, LOSTFTL, LIMITAC, REQSUPY, TNOW)
3176      C
3177           IF (LEVPRT.GE.2.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
3178               PRINT*, '*** RESUPPLY DETERMINED, TIME ', TNOW
3179           ENDIF
3180      C
3181      C      SET NETWORK VARIABLES TO 1 IF SQUADRON REQUIRES RESUPPLY,

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3182      C      SET TO 0 IF NO RESUPPLY IS REQUIRED.
3183      C
3184      DO 730 I = 1,6
3185          XX(49+I) = 0.0
3186          IF (ACTIVE(I).AND.REQSUPY(I)) XX(49+I) = 1.0
3187      730 CONTINUE
3188      C
3189      C
3190      C
3191      C      DETERMINE THE NUMBER OF AIRCRAFT AVAILABLE TO FLY A MISSION
3192      C      PER SQUADRON, THEN RECONFIGURE THE AIRCRAFT BASED ON THE
3193      C      SAME RATIOS AS ORIGINALLY DESIGNATED (INITAC).
3194      C
3195      DO 740 I = 1,300
3196          IF (NCSQ(I).GT.0.AND.NCSQ(I).LE.6) THEN
3197              NSQ = NCSQ(I)
3198              NAVAIL(NSQ) = NAVAIL(NSQ) + 1
3199          ENDIF
3200      740 CONTINUE
3201      C
3202      IF (NNQ(19).GT.0) THEN
3203          DO 750 I = 1,NNQ(19)
3204              NTAIL = QSET(LOCAT(I,19)+2)
3205              NSQ = NCSQ(NTAIL)
3206              NAVAIL(NSQ) = NAVAIL(NSQ)-1
3207      750 CONTINUE
3208      ENDIF
3209      C
3210      IF (LEVPRT.GE.2.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
3211          PRINT*,'-A/C AVAILABLE BY SQDN: ',(NAVAIL(I),I=1,6)
3212      ENDIF
3213      C
3214      CALL RECONFG(INITAC,MAXCONF,NACTYPE,NAVAIL,TNOW)
3215      C
3216      IF (LEVPRT.GE.2.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
3217          PRINT*,'*** A/C RECONFIGURED, TIME ',TNOW
3218      ENDIF
3219      C
3220      C
3221      RETURN
3222      C
3223      C
3224      C

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3225      C      *****
3226      C      SPARE AN AIRCRAFT -- EVENT 10.
3227      C      *****
3228      1000 CONTINUE
3229      C
3230      C
3231      C      SEE IF A SPARE A/C IS AVAILABLE, IF SO SCHEDULE IT TO ARRIVE
3232      C      AT PREFLIGHT AFTER A SMALL DELAY (TIME TO SWITCH PILOTS, ETC.)
3233      XX(95)=0.0
3234      NSQ=ATRIB(1)
3235      NTK=ATRIB(12)
3236      NRP=NSQ*3-2
3237      C
3238      IF(NNQ(NRP).GT.0)THEN
3239      J=0
3240      1010 IF(J.EQ.NNQ(NRP))GOTO 1030
3241      J = J + 1
3242      IF(QSET(LOCAT(J,NRP)+12).NE.NTK)GOTO 1010
3243      C
3244      L = LOCAT(J,NRP)
3245      IF(LEVPRF.GE.4.AND.TNOW.GE.BPRF.AND.TNOW.LE.EPRF) THEN
3246      PRINT*, ' SPARE A/C FOUND'
3247      PRINT*, ' TAIL ',QSET(L+2),', ASSIGNED TO MSN ',ATRIB(46)
3248      ENDIF
3249      C
3250      XX(95) = 1.0
3251      CALL RMVDE(J,NRP,A)
3252      DO 1020 I = 31,47
3253      A(I) = ATRIB(I)
3254      1020 CONTINUE
3255      A(48) = 0.0
3256      NACTYPE(NSQ,NTK) = NACTYPE(NSQ,NTK) - 1
3257      CALL SCHDL(11,TRIAC(4,5,6,3),A)
3258      1030 CONTINUE
3259      ENDIF
3260      C
3261      RETURN
3262      C
3263      C
3264      C
3265      C      *****
3266      C      FILE SPARE A/C AT MX PREFLIGHT -- EVENT 11.
3267      C      *****
3268      C
3269      C
3270      1100 CALL FILEM(21,ATRIB)
3271      RETURN
3272      C
3273      END
3274      C

```

3275	C
3276	C
3277	C
3278	C

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3279          SUBROUTINE ORCANPT(PRIORITY,TANKS,DAY,FORMED,NSQ,FLTLDS,MFA)
3280          COMMON QSET(1)
3281          COMMON/PFLAG/MAXPRT,LEVPRT,BPRT,EPRT
3282          C
3283          INTEGER POINT(100),CREW(3),FIRST,DAY,PILOT,PRIORITY(6),ACPOOL,
3284          &      NSET(1),PLPOOL
3285          LOGICAL FORMED
3286          EQUIVALENCE (NSET(1),QSET(1))
3287          C
3288          C      PRIORITY IS A QUEUE OF SQUADRON NUMBERS.  THE FIRST SQUADRON TO BE
3289          C      CHECKED TO FORM A FLIGHT IS PRIORITY(1), AND SO ON TO PRIORITY(6).
3290          C
3291          C      FORMED IS A LOGICAL VARIABLE (TRUE OR FALSE) WHICH TELLS THE
3292          C      EXECUTIVE ROUTINE IF THE FUNCTION WAS SUCCESSFUL IN FORMING A FLT.
3293          C
3294          C      TANKS IS THE REQ'D TANK CONFIGURATION FOR THE FLIGHT.  ALL A/C
3295          C      SHOULD HAVE THE SAME TANK CONFIGURATION.
3296          C
3297          C      NSQ IS THE CURRENT SQUADRON BEING EXAMINED, AND THE ONE SELECTED
3298          C      IF THE ROUTINE CAN ORGANIZE THE PILOTS.
3299          C
3300          C
3301          C
3302          C      FLIGHTS ARE FORMED BY THE FOLLOWING RULES:
3303          C      1.  A SQUADRON IS FOUND THAT HAS AT LEAST THREE PILOTS AND
3304          C          AIRCRAFT OF THE DESIRED TANK CONFIGURATION.
3305          C      2.  WITHIN THAT SQUADRON, A FLIGHT LEAD QUALIFIED PILOT IS
3306          C          FOUND.  IF NO FLIGHT LEAD QUALIFIED PILOT IS FOUND,
3307          C          ANOTHER SQUADRON IS SELECTED.
3308          C      3.  NOW TRY TO FIND A SECOND FLIGHT LEAD QUALIFIED PILOT.  IF
3309          C          ONE IS FOUND, THE PILOT GETS A/C 3 IN THE FLIGHT.  IF
3310          C          ONE IS NOT LOCATED, GET A NON-FLIGHT LEAD QUALIFIED PILOT
3311          C          AND PLACE HIM IN A/C 3.
3312          C      4.  FOR THE SECOND AIRCRAFT, GET A NON-QUALIFIED PILOT.
3313          C          IF NONE ARE AVAILABLE, USE A FLIGHT LEAD QUALIFIED PILOT.
3314          C      5.  IF THE FLIGHT CAN NOT BE FORMED FROM THIS SQUADRON, TRY
3315          C          THE NEXT SQUADRON UNTIL ALL HAVE BEEN EXAMINED OR A
3316          C          FLIGHT CAN BE FORMED.
3317          C
3318          C      THE ABOVE RULES IMPLY THAT A CASE 2 FLIGHT IS PREFERRED,
3319          C      WITH A CASE 1 OR CASE 3 BEING FORMED IF CASE 2 IS IMPOSSIBLE.
3320          C
3321          C      THE CASE DEFINITIONS ARE:
3322          C          FLD - FLIGHT LEAD QUALIFIED
3323          C          NFL - NON FLIGHT LEAD QUALIFIED
3324          C
3325          C          CASE      A/C 1      A/C 2      A/C 3
3326          C          1          FLD        NFL        NFL
3327          C          2          FLD        NFL        FLD
3328          C          3          FLD        FLD        FLD

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3329      C
3330      C
3331      C   ADDITIONAL RESTRICTIONS ARE ALSO PLACED ON THE SELECTION
3332      C   OF A PARTICULAR PILOT IF ONE OR MORE PILOTS IN A SQUADRON
3333      C   READY POOL MEET THE ABOVE CRITERIA.  THE TIE BREAKING RULES
3334      C   ARE:
3335      C   1.  SELECT THE FIRST QUALIFIED PILOT IN THE READY POOL THAT
3336      C       HAS FLOWN LESS THAN THREE SORTIES FOR THE DAY.
3337      C   2.  IF ALL HAVE FLOWN THREE OR MORE SORTIES FOR THE DAY,
3338      C       SELECT THE FIRST ONE IN THE READY POOL.
3339      C
3340      C
3341      C
3342      C
3343      C
3344      C   SET UP INITIAL PARAMETERS.
3345      C
3346      C   FORMED = .FALSE.
3347      C
3348      C   J = 1
3349      C100 CONTINUE
3350      C
3351      C   SELECT THE SQUADRON TO BE EXAMINED.
3352      C   NSQ = PRIORITY(J)
3353      C   ACPPOOL = NSQ*3 - 2
3354      C   PLPOOL = NSQ*3 - 1
3355      C   NWTANKS = 0
3356      C
3357      C   COUNT THE NUMBER OF AIRCRAFT IN THE SELECTED SQUADRON WITH
3358      C   THE CORRECT DCONFIGURATION.
3359      C
3360      C   IF(NNQ(ACPOOL).GE.3) THEN
3361      C       DO 150 I = 1,NNQ(ACPOOL)
3362      C         IF(QSET(LOCAT(I,ACPOOL)+12).EQ.TANKS)NWTANKS=NWTANKS+1
3363      C150   CONTINUE
3364      C   ENDIF
3365      C
3366      C
3367      C   IF AT LEAST THREE AIRCRAFT AND THREE PILOTS, TRY TO FORM
3368      C   A FLIGHT.
3369      C
3370      C   IF(NWTANKS.GE.3.AND.NNQ(PLPOOL).GE.3) THEN
3371      C
3372      C       MAX = NNQ(PLPOOL)
3373      C       FLTLOS = 2.0
3374      C       FORMED = .TRUE.
3375      C
3376      C   DISASSEMBLE THE PILOT READY POOL FOR CLOSER EXAMINATION
3377      C   AND REORGANIZATION (IF NECESSARY).
3378      C

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```

3379          DO 200 I = MAX,1,-1
3380          CALL ULINK(I,PLPOOL)
3381          POINT(I) = MFA
3382          200 CONTINUE
3383          C
3384          C GET FIRST CREW MEMBER - PILOT OF A/C 1
3385          C
3386          CREW(1) = 0
3387          FIRST = 0
3388          C
3389          I = 1
3390          210 CONTINUE
3391          IF(QSET(POINT(I)+3).GE.1) THEN
3392          IF(QSET(POINT(I)+3+DAY).LT.3) THEN
3393          CREW(1) = I
3394          ELSE
3395          IF(FIRST.EQ.0) FIRST = I
3396          ENDIF
3397          ENDIF
3398          I = I + 1
3399          IF(I.LE.MAX.AND.CREW(1).EQ.0) GO TO 210
3400          C
3401          IF(CREW(1).EQ.0) CREW(1) = FIRST
3402          IF(CREW(1).EQ.0) FORMED = .FALSE.
3403          C
3404          C FIND SECOND CREW MEMBER - PILOT OF A/C 3
3405          C
3406          IF(FORMED) THEN
3407          CREW(3) = 0
3408          FIRST = 0
3409          PILOT = 0
3410          C
3411          I = 1
3412          230 CONTINUE
3413          IF(I.NE.CREW(1)) THEN
3414          IF(QSET(POINT(I))+3.GE.1) THEN
3415          IF(QSET(POINT(I)+3+DAY).LT.3) THEN
3416          CREW(3) = I
3417          ELSE
3418          IF(FIRST.EQ.0) FIRST = I
3419          ENDIF
3420          ELSE
3421          IF(PILOT.EQ.0) PILOT = I
3422          ENDIF
3423          ENDIF
3424          I = I + 1
3425          IF(I.LE.MAX.AND.CREW(3).EQ.0) GO TO 230
3426          C
3427          IF(CREW(3).EQ.0) CREW(3) = FIRST
3428          IF(CREW(3).EQ.0) THEN

```

```

3429          CREW(3) = PILOT
3430          FLTLDS = 1.0
3431          ENDIF
3432          IF(CREW(3).EQ.0)FORMED = .FALSE.
3433          ENDIF
3434          C
3435          C
3436          C
3437          IF(FORMED) THEN
3438          C
3439          CREW(2) = 0
3440          FIRST = 0
3441          FLTLD = 0
3442          THREE = 0
3443          C
3444          I = 1
3445          220 CONTINUE
3446          IF(CREW(1).NE.I.AND.CREW(3).NE.I) THEN
3447          C
3448          IF(QSET(POINT(I)+3).EQ.0) THEN
3449          C
3450          IF(QSET(POINT(I)+3+DAY).LT.3) THEN
3451          CREW(2) = I
3452          ELSE
3453          IF(FIRST.EQ.0) FIRST = I
3454          ENDIF
3455          C
3456          ELSE
3457          IF(QSET(POINT(I)+3+DAY).LT.3) THEN
3458          IF(FLTLD.EQ.0)FLTLD=1
3459          ELSE
3460          IF(THREE.EQ.0)THREE = I
3461          ENDIF
3462          C
3463          ENDIF
3464          C
3465          ENDIF
3466          I = I + 1
3467          IF(I.LE.MAX.AND.CREW(2).EQ.0) GO TO 220
3468          C
3469          IF(CREW(2).EQ.0) CREW(2) = FIRST
3470          IF(CREW(2).EQ.0) THEN
3471          CREW(2) = FLTLD
3472          FLTLDS = 3.0
3473          ENDIF
3474          IF(CREW(2).EQ.0) THEN
3475          CREW(2) = THREE
3476          FLTLDS = 3.0
3477          ENDIF
3478          IF(CREW(2).EQ.0)FORMED=.FALSE.

```

```

3479          ENDIF
3480      C
3481      C
3482      C      REASSEMBLE THE PILOT READY POOL
3483      C
3484      IF (.NOT. FORMED) THEN
3485          CREW(1) = 1
3486          CREW(2) = 2
3487          CREW(3) = 3
3488      ENDIF
3489      C
3490      DO 300 I = 1,3
3491          MFA = POINT(CREW(I))
3492          CALL LINK(PLPOOL)
3493      300      CONTINUE
3494      DO 310 I = 1,MAX
3495          IF (I.NE.CREW(1).AND.I.NE.CREW(2).AND.I.NE.CREW(3)) THEN
3496              MFA = POINT(I)
3497              CALL LINK(PLPOOL)
3498          ENDIF
3499      310      CONTINUE
3500      C
3501      ENDIF
3502      C
3503      C
3504      J = J + 1
3505      IF (J.LE.6.AND..NOT.FORMED) GOTO 100
3506      C
3507      C
3508      C      RESET THE PRIORITY SEQUENCE
3509      C
3510      IF (FORMED.AND.J.LE.6) THEN
3511          DO 400 I = J,6
3512              PRIORITY(I - 1) = PRIORITY(I)
3513      400      CONTINUE
3514          PRIORITY(6) = NSQ
3515      ENDIF
3516      C
3517      C
3518      RETURN
3519      END
3520      C
3521      C
3522      C
3523      C
3524      C

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```

3525          SUBROUTINE NIGHTPK(NCALLS,NPARK,NTYPE)
3526      C
3527          COMMON QSET(1)
3528          COMMON/PFLAG/MAXPRT,LEVPR,BPRT,EPRT
3529          DIMENSION NSET(1),NPARK(6,50,2),NTYPE(6,3)
3530          EQUIVALENCE (NSET(1),QSET(1))
3531      C
3532      C
3533      C      PERFORM THE NIGHT PARKING ACTIVITY.  DOUBLE UP AIRCRAFT
3534      C      IN THE SHELTERS TILL MORNING (EXCEPT THE QRA SHELTERS).
3535      C
3536      DO 100 I = 1,6
3537          IF(NNQ(I*3-2).NE.0) THEN
3538      C
3539              NBEGIN = 1
3540              IF(NCALLS.GE.2) NBEGIN = NNQ(I*3-2)
3541              DO 200 J = NBEGIN,NNQ(I*3-2)
3542                  LOC = LOCAT(J,I*3-2)
3543                  NSQ = QSET(LOC+1)
3544                  IF(QSET(LOC+3).NE.1) THEN
3545                      K = 0
3546      220              IF(K.GE.NTYPE(NSQ,1)) GO TO 260
3547                      K = K + 1
3548                      IF(NPARK(NSQ,K,2).NE.0) GO TO 220
3549      C
3550                      NPARK(NSQ,K,2) = QSET(LOC+2)
3551                      QSET(LOC+3) = 1
3552                      K = 6
3553      240              IF(K.GE.50) GO TO 260
3554                      K = K + 1
3555                      IF(NPARK(NSQ,K,1).NE.QSET(LOC+2)) GO TO 240
3556                      NPARK(NSQ,K,1) = 0
3557      260              CONTINUE
3558                  ENDIF
3559      200              CONTINUE
3560      C
3561                  ENDIF
3562      100              CONTINUE
3563      C
3564              RETURN
3565              END
3566      C
3567      C
3568      C
3569      C
3570      C

```

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3571          SUBROUTINE QRA SWCH(NCSQ,NPARK)
3572          COMMON QSET(1)
3573          COMMON/PFLAG/MAXPRT,LEVPR,BPRT,EPRT
3574          INTEGER NCSQ(300),NSET(1),NPARK(6,50,2),MARK(75)
3575          EQUIVALENCE (NSET(1),QSET(1))
3576          C
3577          C
3578          C      CHANGE OVER THE QRA AIRCRAFT OF THE RESUPPLIED SQUADRONS
3579          C
3580          DO 100 I = NNQ(19),1,-1
3581              NSQ = QSET(LOCAT(I,19)+1)
3582              NTAIL = QSET(LOCAT(I,19)+2)
3583              IF(NNQ(NSQ*3-2).GT.0.AND.NSQ.NE.NCSQ(NTAIL))THEN
3584                  CALL ULINK(I,19)
3585                  CALL LINK(NCSQ(NTAIL)*3-2)
3586                  JTAIL = QSET(LOCAT(NNQ(NSQ*3-2),NSQ*3-2)+2)
3587                  CALL ULINK(NNQ(NSQ*3-2),NSQ*3-2)
3588                  CALL LINK(19)
3589                  IF(NPARK(NSQ,1,1).EQ.NTAIL) NPARK(NSQ,1,1) = JTAIL
3590                  IF(NPARK(NSQ,2,1).EQ.NTAIL) NPARK(NSQ,2,1) = JTAIL
3591                  IF(NPARK(NSQ,3,1).EQ.NTAIL) NPARK(NSQ,3,1) = JTAIL
3592                  DO 200 K = 1,50
3593                      DO 200 J = 1,2
3594                          IF(NPARK(NSQ,K,J).EQ.JTAIL) NPARK(NSQ,K,J) = NTAIL
3595                      200      CONTINUE
3596                  ENDIF
3597              100      CONTINUE
3598          C
3599          C
3600          C      CHANGE OVER THE QRA PILOTS FOR ALL THE SQUADRONS
3601          C
3602          DO 250 I = 1,6
3603              K = 0
3604              DO 300 J = 1,NNQ(20)
3605                  NL = LOCAT(J,20)
3606                  IF(QSET(NL+1).EQ.I)THEN
3607                      K = K + 1
3608                      MARK(K) = NL
3609                  ENDIF
3610              300      CONTINUE
3611          C
3612          M = 0
3613          IF(NNQ(I*3-1).GT.0.AND.K.GT.0)THEN
3614              DO 400 J = NNQ(I*3-1),1,-1
3615                  NEW = LOCAT(J,I*3-1)
3616                  IF(QSET(NEW+3).GE.2.0.AND.M.LT.K)THEN
3617                      QSET(NEW+3) = 3.0
3618                      M = M + 1
3619                      QSET(MARK(M)+3) = 2.0
3620                      CALL ULINK(-MARK(M),20)

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3621		CALL LINK(I*3-1)
3622		CALL ULINK(-NEW,I*3-1)
3623		CALL LINK(20)
3624		ENDIF
3625	400	CONTINUE
3626		ENDIF
3627	250	CONTINUE
3628	C	
3629	C	
3630		RETURN
3631		END
3632	C	
3633	C	
3634	C	
3635	C	
3636	C	

```

3637          SUBROUTINE RESUPPLY(ACTIVE,NCSQ,LOSTFTL,LIMITAC,REQSUPY,TNOW)
3638          COMMON QSET(1)
3639          COMMON/PFLAG/MAXPRT,LEVPRT,BPRT,EPRT
3640          C
3641          INTEGER NOPER(6),NCSQ(300),LOSTFTL(6)
3642          INTEGER NSET(1)
3643          EQUIVALENCE (NSET(1),QSET(1))
3644          LOGICAL REQSUPY(6),ACTIVE(6)
3645          C
3646          DO 50 I = 1,6
3647              NOPER(I) = 0
3648              REQSUPY(I) = .FALSE.
3649          50 CONTINUE
3650          C
3651          C DETERMINE THE TOTAL NUMBER OF AIRCRAFT PER SQUADRON.
3652          C
3653          DO 60 I = 1,300
3654              IF(NCSQ(I).GT.0.AND.NCSQ(I).LE.6)THEN
3655                  NSQ = NCSQ(I)
3656                  NOPER(NSQ) = NOPER(NSQ) + 1
3657              ENDIF
3658          60 CONTINUE
3659          C
3660          IF(LEVPRT.GE.3.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT)THEN
3661              PRINT*,'-A/C OPERATIONAL BY SQDN: ',(NOPER(I),I=1,6)
3662          ENDIF
3663          C
3664          C
3665          C CHECK TO SEE IF ALL SQUADRONS IN A WING HAVE ENOUGH AIR-
3666          C CRAFT BETWEEN THEM TO FORM A FLIGHT.
3667          C
3668          NBEGIN = 1
3669          NSTOP = 6
3670          IF(NOPER(1)+NOPER(2)+NOPER(3).LT.LIMITAC) THEN
3671              IF(ACTIVE(1)) REQSUPY(1) = .TRUE.
3672              IF(ACTIVE(2)) REQSUPY(2) = .TRUE.
3673              IF(ACTIVE(3)) REQSUPY(3) = .TRUE.
3674              NBEGIN = 4
3675          ENDIF
3676          IF(NOPER(4)+NOPER(5)+NOPER(6).LT.LIMITAC) THEN
3677              IF(ACTIVE(4)) REQSUPY(4) = .TRUE.
3678              IF(ACTIVE(5)) REQSUPY(5) = .TRUE.
3679              IF(ACTIVE(6)) REQSUPY(6) = .TRUE.
3680              NSTOP = 3
3681          ENDIF
3682          C
3683          DO 100 I = NBEGIN,NSTOP
3684          C
3685          IF(LEVPRT.GE.3.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT)THEN
3686              PRINT*,'-PROCESSING SQDN ',I

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3687      ENDIF
3688      C
3689      IF (NOPER(I).LT.LIMITAC.AND.ACTIVE(I)) THEN
3690      C
3691          IF (LEVPR1.GE.3.AND.TNOW.GE.BPR1.AND.TNOW.LE.EPR1) THEN
3692              PRINT*,'-RESUPPLY SQDN ',I
3693          ENDIF
3694      C
3695          REQSUPY(I) = .TRUE.
3696      C
3697      C
3698      C
3699      C
3700      NSQ1 = 1 + (I/4)*3
3701      IF (I.EQ.1.OR.I.EQ.4) NSQ1 = 2 + (I/4)*3
3702      NSQ2 = 3 + (I/4)*3
3703      IF (I.EQ.3.OR.I.EQ.6) NSQ2 = 2 + (I/4)*3
3704      C
3705      C
3706      C
3707      C
3708      C
3709      C
3710      C
3711      C
3712      C
3713      C
3714      C
3715      C
3716      C
3717      C
3718      C
3719      C
3720      C
3721      C
3722      C
3723      C
3724      C
3725      C
3726      C
3727      C
3728      C
3729      C
3730      C
3731      C
3732      C
3733      C
3734      C
3735      C
3736      C

```

IF (NOPER(I).LT.LIMITAC.AND.ACTIVE(I)) THEN
 IF (LEVPR1.GE.3.AND.TNOW.GE.BPR1.AND.TNOW.LE.EPR1) THEN
 PRINT*,'-RESUPPLY SQDN ',I
 ENDIF
 REQSUPY(I) = .TRUE.
 DETERMINE THE SISTER SQUADRONS OF SQUADRON I
 NSQ1 = 1 + (I/4)*3
 IF (I.EQ.1.OR.I.EQ.4) NSQ1 = 2 + (I/4)*3
 NSQ2 = 3 + (I/4)*3
 IF (I.EQ.3.OR.I.EQ.6) NSQ2 = 2 + (I/4)*3
 CALCULATE THE NUMBER OF AIRCRAFT THE SISTER SQUADRONS
 REQUIRE TO BECOME OPERATIONAL (NOPER.GE.LIMITAC) IF THE
 SISTER SQUADRON IS NOT BEING RESUPPLIED.
 NREQ1 = MAX(0,LIMITAC-NOPER(NSQ1))
 NREQ2 = MAX(0,LIMITAC-NOPER(NSQ2))
 NCNT = 0
 MOVE1 = 0
 MOVE2 = 0
 IF A SQUADRON REQUIRES RESUPPLY, ITS AIRCRAFT ARE FARMED
 OUT TO ITS SISTER SQUADRONS ACCORDING TO THE FOLLOWING
 RULES (UNLESS ONE OF THE SISTER SQUADRONS IS ALSO BEING
 RESUPPLIED, IN WHICH CASE, ALL THE AIRCRAFT ARE FARMED
 TO THE OTHER SISTER SQUADRON):
 1. IF THE SECOND SISTER SQUADRON IS NOT OPERATIONAL
 (NOPER < LIMITAC), THEN IT RECEIVES AIRCRAFT UNTIL
 IT IS AT OPERATIONAL STRENGTH.
 2. THE FIRST SISTER SQUADRON IS THEN BROUGHT UP TO
 STRENGTH.
 3. THE TWO SISTER SQUADRONS ARE BROUGHT UP TO EQUALL
 NUMBERS, AS LONG AS THEIR ARE STILL AIRCRAFT.
 4. FINALLY, IF ANY AIRCRAFT ARE LEFT, THEY ARE DISTRIB-
 UTED EQUALLY BETWEEN THE TWO SISTER SQUADRONS.
 DO 200 J = 1,300
 IF (NCSQ(J).EQ.1) THEN
 IF (REQSUPY(NSQ1)) THEN
 NEXT = NSQ2
 ELSEIF (REQSUPY(NSQ2)) THEN

```

3737             NEXT = NSQ1
3738     ELSEIF(MOVE2.LT.NREQ2) THEN
3739             NEXT = NSQ2
3740     ELSEIF(MOVE1.LT.NREQ1) THEN
3741             NEXT = NSQ1
3742     ELSEIF(NOPER(NSQ1).LT.NOPER(NSQ2)) THEN
3743             NEXT = NSQ1
3744     ELSE
3745             NEXT = NSQ2
3746     ENDIF
3747 C
3748     NCSQ(J) = NEXT
3749     NOPER(NEXT) = NOPER(NEXT) + 1
3750     NOPER(I) = NOPER(I) - 1
3751     IF(NEXT.EQ.NSQ1) MOVE1 = MOVE1 + 1
3752     IF(NEXT.EQ.NSQ2) MOVE2 = MOVE2 + 1
3753 C
3754     ENDIF
3755 200 CONTINUE
3756 C
3757     IF(LEVPRT.GE.3.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT) THEN
3758     PRINT*,'-A/C AFTER RESUPPLY OF ',I,' IS ',(NOPER(J),J=1,6)
3759     ENDIF
3760 C
3761 C     MOVE A/C FROM ONE POOL TO ANOTHER
3762 C
3763     DO 300 J = NNQ(I*3-2),1,-1
3764 C
3765         NTAIL = QSET(LOCAT(J,I*3-2)+2)
3766         CALL ULINK(J,I*3-2)
3767         IF(NCSQ(NTAIL).EQ.NSQ1) THEN
3768             CALL LINK(NSQ1*3-2)
3769         ELSE
3770             CALL LINK(NSQ2*3-2)
3771         ENDIF
3772 300 CONTINUE
3773 C
3774 C
3775 C     NEXT, FARM OUT THE PILOTS. EACH SISTER SQUADRON GETS ITS
3776 C     FLIGHT LEADS REPLACED BY SQUADRON I (AS LONG AS SQUADRON
3777 CC I HAS SOME). AFTER THE FLIGHT LEADS ARE FARMED OUT, EACH
3778 C     SISTER SQUADRON RECEIVES AS MANY TOTAL PILOTS FROM SQUAD-
3779 C     RON I AS THEY RECEIVED AIRCRAFT. THE REMAINING PILOTS
3780 C     BECOME PART OF THE REPLACEMENT SQUADRON.
3781 C
3782     NPL1 = LOSTFTL(NSQ1)
3783     NPL2 = LOSTFTL(NSQ2)
3784 C
3785     IF(NPL2.GT.NPL1) THEN
3786 C

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3787          LEN = MIN(NPL2-NPL1,MOVE2)
3788          J = NNQ(I*3-1)
3789          400      IF(J.LE.0.OR.LEN.EQ.0) GO TO 500
3790                  IF(QSET(LOCAT(J,I*3-1)+3).GE.1) THEN
3791                      QSET(LOCAT(J,I*3-1)+1) = NSQ2
3792                      CALL ULINK(J,I*3-1)
3793                      CALL LINK(NSQ2*3-1)
3794                      MOVE2 = MOVE2 - 1
3795                      LEN = LEN - 1
3796                  ENDIF
3797                  J = J - 1
3798                  GO TO 400
3799          500      CONTINUE
3800      C
3801      ELSEIF(NPL1.GT.NPL2) THEN
3802      C
3803          LEN = MIN(NPL1 -NPL2,MOVE1)
3804          J = NNQ(I*3-1)
3805          600      IF(J.LE.0.OR.LEN.EQ.0) GO TO 700
3806                  IF(QSET(LOCAT(J,I*3-1)+3).GE.1) THEN
3807                      QSET(LOCAT(J,I*3-1)+1) = NSQ1
3808                      CALL ULINK(J,I*3-1)
3809                      CALL LINK(NSQ1*3-1)
3810                      MOVE1 = MOVE1 - 1
3811                      LEN = LEN - 1
3812                  ENDIF
3813                  J = J - 1
3814                  GO TO 600
3815          700      CONTINUE
3816      C
3817      ENDIF
3818      C
3819      J = NNQ(I*3-1)
3820      800      IF(J.LE.0.OR.MOVE2.LE.0)GOTO 900
3821              MOVE2 = MOVE2 - 1
3822              QSET(LOCAT(J,I*3-1)+1) = NSQ2
3823              CALL ULINK(J,I*3-1)
3824              CALL LINK(NSQ2*3-1)
3825              J = J - 1
3826              GOTO 800
3827          900      CONTINUE
3828      C
3829      J = NNQ(I*3-1)
3830      1000     IF(J.LE.0.OR.MOVE1.LE.0)GOTO 1100
3831              MOVE1 = MOVE1 - 1
3832              QSET(LOCAT(J,I*3-1)+1) = NSQ1
3833              CALL ULINK(J,I*3-1)
3834              CALL LINK(NSQ1*3-1)
3835              J = J - 1
3836              GOTO 1000

```

3837		1100	CONTINUE
3838	C		
3839		ENDIF	
3840		100	CONTINUE
3841	C		
3842		RETURN	
3843		END	
3844	C		
3845	C		
3846	C		
3847	C		

```

3848      SUBROUTINE RECONFG(INITAC,MAXCONF,NACTYPE,NAVAIL,TNOW)
3849      COMMON QSET(1)
3850      COMMON/PFLAC/MAXPRT,LEVPRT,BPRT,EPRT
3851      C
3852      DIMENSION NSET(1),NCUM(7),NWANT(3),INITAC(3),INITSQ(3),MAXCONF(6)
3853      &,NACTYPE(6,3),NAVAIL(6)
3854      EQUIVALENCE (NSET(1),QSET(1))
3855      C
3856      C   AIRCRAFT ARE RECONFIGURED FOR THE NEXT DAY ACCORDING TO THE
3857      C   INITIAL CONFIGURATION RATIOS, INITAC, SET BY THE USER.
3858      C   ADDITIONALLY, ALL THE AIRCRAFT IN A PARTICULAR SQUADRON ARE
3859      C   CONFIGURED THE SAME.
3860      C
3861      C
3862      C   DETERMINE THE NUMBER OF AIRCRAFT PER CONFIGURATION.
3863      C
3864      NCUM(1) = 0
3865      DO 100 I = 2,7
3866      NCUM(I) = NCUM(I-1) + NAVAIL(I-1)
3867      100 CONTINUE
3868      INITRDY = INITAC(1) + INITAC(2) + INITAC(3)
3869      DO 200 I = 1,3
3870      NWANT(I) = FLOAT(INITAC(I))/FLOAT(INITRDY)*FLOAT(NCUM(7))+0.5
3871      INITSQ(I) = 0
3872      200 CONTINUE
3873      C
3874      IF(LEVPRT.GE.3.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT)THEN
3875      PRINT*,'-NUMBER OF A/C WANTED PER CONFIGURATION (3,2,1): '
3876      PRINT*,'      ',(NWANT(I),I=3,1,-1)
3877      ENDIF
3878      C
3879      C
3880      C   DETERMINE THE NUMBER OF SQUADRONS PER CONFIGURATION.
3881      C
3882      K = 1
3883      300 IF(NWANT(3).LE.NCUM(K)) GO TO 400
3884      K = K + 1
3885      INITSQ(3) = INITSQ(3) + 1
3886      IF(K.LE.7) GO TO 300
3887      400 IF(K.LE.7.AND.NWANT(3)+NWANT(2).LE.NCUM(K)) GO TO 500
3888      K = K + 1
3889      INITSQ(2) = INITSQ(2) + 1
3890      IF(K.LE.7) GO TO 400
3891      500 INITSQ(1) = 6 - INITSQ(3) - INITSQ(2)
3892      C
3893      IF(LEVPRT.GE.3.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT)THEN
3894      PRINT*,'-NUMBER OF SQDN REQ PER CONFIGURATION (3,2,1): '
3895      PRINT*,'      ',INITSQ(3),INITSQ(2),INITSQ(1)
3896      ENDIF
3897      C

```

```

3898      C
3899      C RECONFIGURE THE AIRCRAFT.
3900      C
3901      DO 600 I = 1,6
3902          MAXCONF(I) = 1
3903          IF(I.LE.INITSQ(2)+INITSQ(3)) MAXCONF(I) = 2
3904          IF(I.LE.INITSQ(3)) MAXCONF(I) = 3
3905          DO 620 J = 1,3
3906              NACTYPE(I,J) = 0
3907      620  CONTINUE
3908          NACTYPE(I,MAXCONF(I)) = NNQ(I*3-2)
3909          DO 640 J = 1,NNQ(I*3-2)
3910              QSET(LOCAT(J,I*3-2)+12) = MAXCONF(I)
3911      640  CONTINUE
3912      600  CONTINUE
3913      C
3914      IF(LEVPRT.GE.3.AND.TNOW.GE.BPRT.AND.TNOW.LE.EPRT)THEN
3915          PRINT*,'-MAXIMUM CONFIGURATION BY SQUADRON: '
3916          PRINT*,'      ',(MAXCONF(I),I=1,6)
3917      ENDIF
3918      C
3919      RETURN
3920      END

```

Appendix C: Notes to Users

Introduction

This appendix has been included to assist a user in providing values for several of the more complicated variables in Subroutines INTLC and USERI. There is no intention in these notes to include information presented elsewhere in Chapters I through IV, and Appendix A and B. Rather, this guide will expand on previously covered material and go into greater depth where required to assist the user in specifying:

- (1) Fragmentary order variables
- (2) Mission variables
- (3) Maintenance failure variables
- (4) Crash/Tow decision matrices
- (5) Airfield facility composition/definition
- (6) Settings for the Master Clock

Of necessity, some variables are less well defined than others in the comments in Subroutines INTLC and USERI. These notes will clarify those variables when used in conjunction with Annex A. These notes conclude with

comments on computer run time and a sample CDC 6600 day file. All line number references in this guide are to Appendix B unless otherwise stated.

The Fragmentary Order

The frag order requires four variables be defined. The variables are inputs to the Scheduler (Event 3). Sortie rates are input to Data Statement SRATE, by day. Refer to Appendix B, page 131 for all variables in this discussion.

Gaggles are only flown to Area 3. If gaggles are desired to Area 2 specify gaggles and give all the Area 3 mission variables the same values and probabilities as Area 2. The percentage of sorties desired to each area is specified in Data Statement REQPC. These values give the Scheduler a target to shoot for.

With the sortie rates, area percentages, and size of gaggles desired, the remainder of the information is straightforward. Data Statement RGAGLE is specified using the number of flights desired in up to two gaggles per day. As an example, lines 64 and 66 show 8 and 8 for Day 1 only. This means two gaggles of 8 three-ships are desired on Day 1 only. Normally, a gaggle launch requires a special effort in the real world and there is a delay time before sorties

begin launching again in a steady flow. This is specified in Data Statement DELAY, lines 71 and 73 (zero delay may be specified). The values are in minutes. If no gaggles are desired, input zeros in NCAGLE.

Data Statement INITAC also has a left-handed influence on the Scheduler. Aircraft are configured in the night routines based on the numbers in INITAC. Using the input values, the coding decides how many squadrons to configure for Areas 3, 2, and 1, in order. A clever user can approach simulating maintenance turnaround scheduling by playing with the numbers. If both gaggles are desired back to back in the morning, then enough Area 3 configured aircraft must be specified in INITAC to meet the requirement. Otherwise turnaround comes into play and the simulation deals with maintenance type scheduling.

Mission Variables

Duration times are at lines 104 to 106 and are triangular (minimum, most likely, maximum). These values are straightforward, as are attrition rates, lines 113 to 118. Sensitivity analysis should be reviewed for attrition rates. Similarly, tank jettison is at lines 121 to 125. Ordnance probabilities are at lines 462 to 480. They are

aggregated over the entire theater, and a macro viewpoint must be adopted to set them. For example, PBLOROP is one aggregated value. When set at 1.0, it is assumed an attempt will always be made to drop or jettison. Then, the only way aircraft return with bombs is due to a malfunction. The gun can only malfunction if it is used. Battle damage and damage level probabilities are at line 484 to 493.

Maintenance Failures

Introduction. Maintenance failures occur when RTOF exceeds the current value of total engine running time. This will occur at an update point following an activity where the aircraft engine was running, as previously described in Chapter III.

Level of Failure. To determine the level of failure, the coding uses the cumulative probabilities in lines 515 to 526.

Data Statement SYSTOL. A system may also fail if an aircraft is delayed at preflight. Data Statement SYSTOL allows the user to specify the number of minutes away from failure a system can be when it is considered broken at preflight. For example, the 5.0 values in line 533 mean that if a system has equal to or less than 5.0 minutes to

failure, it will fail at preflight delay.

Data Statement NBATREP. When aircraft incur battle damage (Attribute(16)) on a mission and subsequently, return to base, a determination is made as to whether they are repairable (node DADA, Appendix A, page 102). Level four and five battle damage were conceptually considered unrepairable at the local level. This is shown in line 544 by the 999999s in the fourth and fifth places of NBATREP. LEVEL 1, 2, and 3 damage is converted to a user specified equivalent maintenance failure code found in NBATREP. After the equivalent code is set, it is combined with the current aircraft failure code. This is done digit by digit, using the highest value of either code in each digit. The aircraft then is processed into maintenance. Aircraft with a 999999 value are conceptually considered to be awaiting depot level repair when available. The 999999 aircraft are available for cannibalization even if they are total losses. The 999999 aircraft are routed to the JUNK file.

Service Times. Service times must also be set for each section of maintenance. Wing and Squadron service times are set in lines 361 to 387. MNT service times are specified between lines 402 and 413. Between lines 391 and 396 are interference times which are added to wing service when a single shop is repairing two systems concurrently as can happen in shops 1 and 3. Between lines 416 and 422

interference times are specified for squadron repairs. These are added for interference in concurrent service.

Mean Time between Failure (MTBF). The values for MTBF are input in Subroutine USER1, at line 130. These values should be as carefully chosen as possible, and sensitivity analysis should be performed on this set of variables.

Beta Distribution Shape Parameters. The use of the shape parameters in calculating MTBF was covered in Chapter III. The process for determining the Beta distribution shape parameters consists of four steps.

- (1) The user must form an opinion of the reliability of each system.
- (2) The user should study histograms, or curves, of the Beta Distribution with various parameters, to select a set of parameters for each system. The parameters should reflect the user's view of the reliability of the particular system.
- (3) The user should generate a series of histograms, or curves, around these parameters to insure the shapes are really what is desired, and to insure the shapes reflect the user's opinion of the relative reliability of the systems.
- (4) The user should use the parameters selected for each system as inputs to Data Statements ALP and

LET at lines 132 and 134.

Each of the steps is relatively self-explanatory, however a short recap is probably useful. Forming an opinion of reliability requires that opinions be made explicit -- not implicit. The shape of the curve will identify the biases. Biases are fine -- as long as they are explicit and sensitivity analysis may be performed.

Using the SLAM program in Figure C.1, sets of sample histograms were generated. In this case, histograms for the 10 SLAM random number streams were generated for the three ALPHA and BETA pairs (5.0,1.5), (3.0,1.5), and (4.0,2.0). This is the family of parameters used in the analysis in this document. The results are presented in Figure C.2.

This family of shape parameters represented the authors' beliefs in the systems' reliabilities. The family of parameters boiled down to three cases. Case I was most reliable (ALPHA = 5.0, BETA = 1.5). The curve is shaped skewed, or humped, to the right. Most failures occur in a range around or near the MTBF. See Figures C.2.1 and C.2.2.

Case II is slightly less reliable (ALPHA = 4.0, BETA = 2.0). The right skew is not so pronounced. See Figures C.2.3 and C.2.4. Case III is least reliable (ALPHA = 3.0, BETA = 1.5). The shape is tending toward normality. See Figures C.2.5 and C.2.6. Refer to Annex A for further

```

.* SLAM STATEMENTS USED TO GENERATE THE BETA HISTOGRAMS.
.*
.*
RNM,CM150000,T100,I0200. T000045,MANN,BOX4566,AFIT,AFIT,AFIT,91,91,91
ATTACH,PROCFIL,ID=A810171,SN=ASDAD.
BEGIN,NOSFILE.
GET,BETABIN,ID=COVEY.
REWIND,BETABIN.
ATTACH,PROCFIL,SLAMPROC,ID=AFIT.
BEGIN,SLAM,,M=BETABIN,PL=100000.
*EOR
GEN,SLMBETA,MANN & SHOOK 91 AFIT,1/8/82,3,YES,NO,YES,NO,NO;
LIMITS,0,1,100;
NETWORK;
    CREATE,,1,,,1000,1;
    ASSIGN,ATRIB(1) = USERF(1);
    TERMINATE;
    ENDNETWORK;
INIT,0,500;
INTLC,XX(1)=5,XX(2)=1.5;
SIMULATE;
INTLC,XX(1)=3,XX(2)=1.5;
SIMULATE;
INTLC,XX(1)=4,XX(2)=2;
FIN;

```

C THE FOLLOWING FORTRAN SUPPLIMENTS THE ABOVE SLAM TO PRODUCE
C THE HISTOGRAMS OF THE BETA DISTRIBUTIONS.

```

SUBROUTINE INTLC
COMMON/D/NCNT,DAT(10,1000)
NCNT = 0
RETURN
END

```

```

FUNCTION USERF(IFN)
COMMON/SCOM1/ATRIB(100),DD(100),DDL(100),DTNOW,II,MFA,MSTOP,NCLNR
&,NCRDR,NPRNT,NNRUN,NNSET,NTAPE,SS(100),SSL(100),TNEXT,TNOW,XX(100)
COMMON/D/NCNT,DAT(10,1000)
USERF = 0.0
NCNT = NCNT + 1
DO 100 I = 1,10
    DAT(I,NCNT) = BETA(XX(1),XX(2),I)
100 CONTINUE
RETURN
END

```

Fig. C.1.1 Beta Histogram Generation Program

```

SUBROUTINE OUTPUT
COMMON/SCOM1/ATRIB(100),DB(100),DDL(100),DTNOW,II,MFA,MSTOP,NCLNR
&,NCRDR,NPRNT,NNRUN,NMSET,NTAPE,SS(100),SSL(100),TNEXT,TNOW,XX(100)
COMMON/D/NCNT,DAT(10,1000)
INTEGER NUM(21)
CHARACTER OUTL(50)

DO 10 K = 1,10
  PRINT 11,K,XX(1),XX(2)
11  FORMAT('1','      GRAPH OF STREAM ',I2,'    ALPHA ',F4.1,
& '      BETA ',F4.1)
  PRINT*,
  PRINT*,
  DO 50 I = 1,21
    NUM(I) = 0
50  CONTINUE
  DO 100 I = 1,1000
    INDEX = DAT(K,I)*20 + 1
    IF(INDEX.GT.21)INDEX = 21
    NUM(INDEX) = NUM(INDEX) + 1
100  CONTINUE
  DO 150 I = 1,21
    LINE = NUM(I)/4
    DO 200 J = 1,50
      OUTL(J) = ' '
200  CONTINUE
    IF(LINE.GT.50)THEN
      LINE = 49
      OUTL(50) = '+'
    ENDIF
    DO 250 J = 1,LINE
      OUTL(J) = '+'
250  CONTINUE
    PRINT 251,NUM(I),(OUTL(L),L=1,50)
251  FORMAT(' ',10X,'( ',I4,' )',3X,'I ',50A1)
150  CONTINUE

    DO 300 J = 1,50
      OUTL(J) = '-'
300  CONTINUE
    PRINT 302,(OUTL(J),J=1,50)
302  FORMAT(' ',19X,'+',50A1)
    PRINT 301
301  FORMAT(' ',21X,'4',47X,'200')
10  CONTINUE

  RETURN
END

```

Fig. C.1.2 Beta Histogram Generation Program

1 GRAPH OF STREAM 7 ALPHA 5.0 BETA 1.5

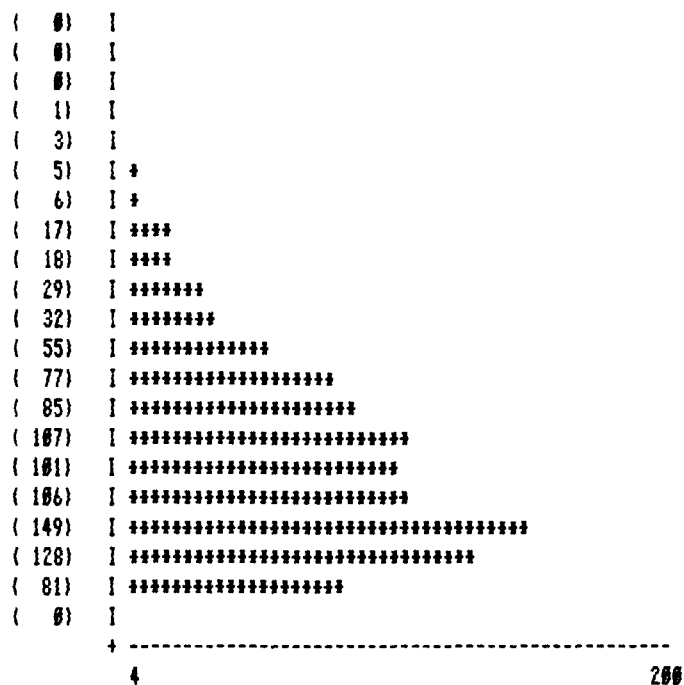


Fig. C.2.1 Case I Histogram

1 GRAPH OF STREAM 8 ALPHA 5.0 BETA 1.5

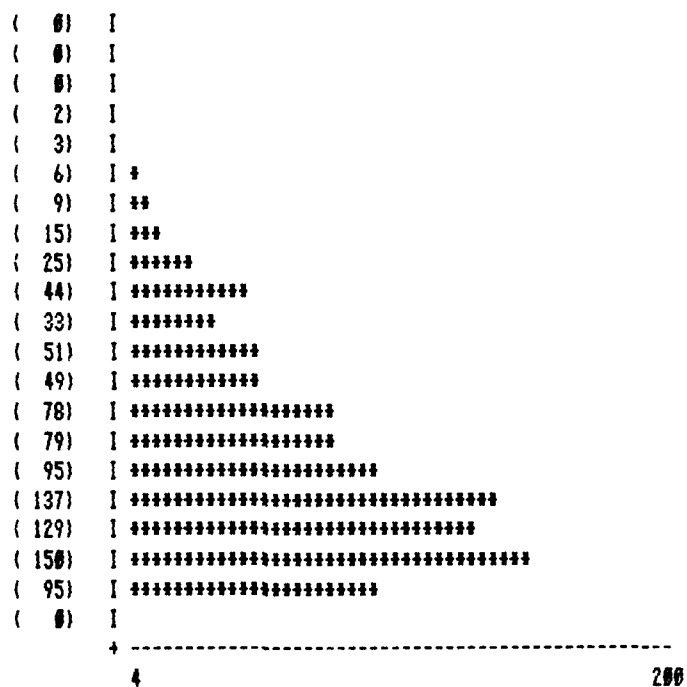


Fig. C.2.2 Case I Histogram

1 GRAPH OF STREAM 7 ALPHA 4.0 BETA 2.0

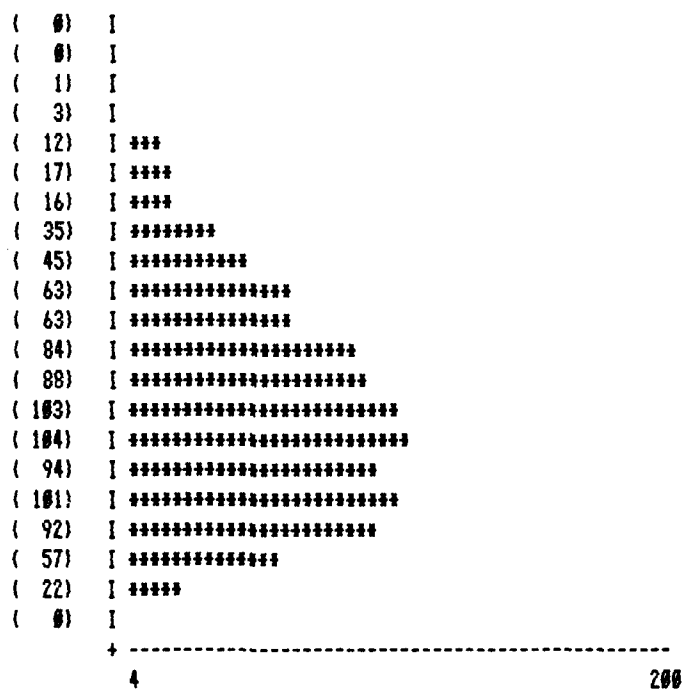


Fig. C.2.3 Case II Histogram

1 GRAPH OF STREAM 8 ALPHA 4.0 BETA 2.0

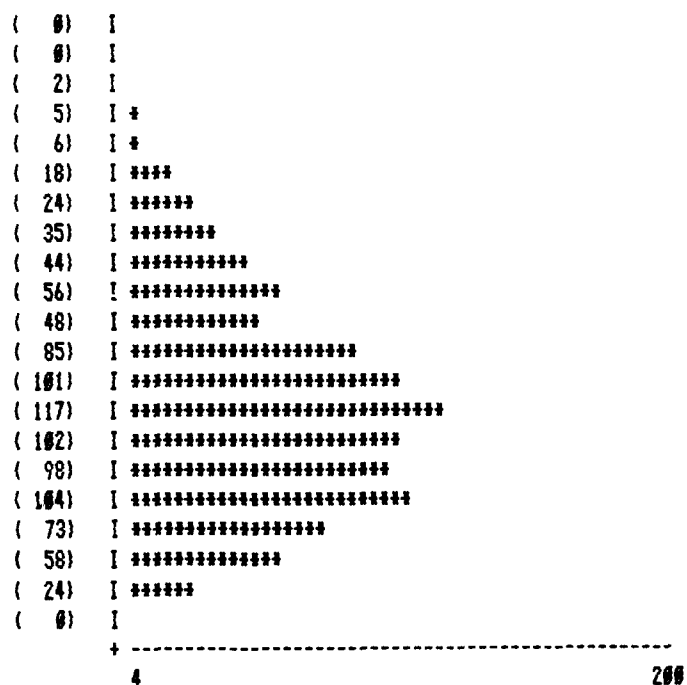


Fig. C.2.4 Case II Histogram

1 GRAPH OF STREAM 7 ALPHA 3.0 BETA 1.5

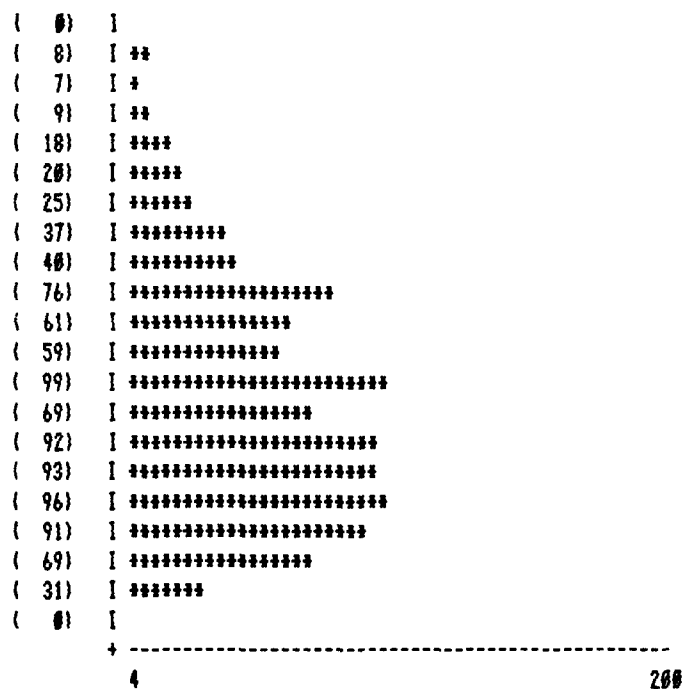


Fig. C.2.5 Case III Histogram

1 GRAPH OF STREAM 8 ALPHA 3.0 BETA 1.5

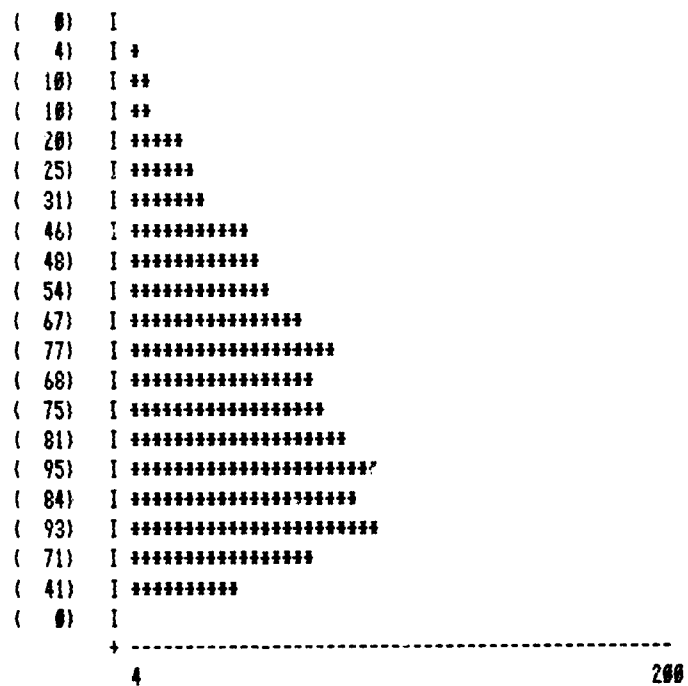


Fig. C.2.6 Case III Histogram

comments.

Once tentative shape parameters have been selected, a family of histograms should be generated and studied to insure that both absolute and relative reliability are being reflected as desired. Finally, input the parameters as explained above.

Crash/Tow Decision Matrices

Introduction. When aircraft malfunctions occur, routing decisions must be made. While airborne, aircraft may crash due to maintenance failure, or battle damage, or a combination of both. On the ground aircraft may require towing. The variables (LCRSH, LTOW, LBAT) used to determine the state of the aircraft after a malfunction are contained between lines 430 and 458. Each matrix (vector) can contain up to 24 encoded numbers. Each encoded number represents a combination of system failure levels.

LCRSH. When a malfunction occurs in the air, the network uses the appropriate FORTRAN routine to compare the aircraft's failure code to the appropriate matrix, digit by digit (system by system). If an aircraft system level is greater than or equal to the corresponding encoded number digit for all systems, the aircraft will crash. The

aircraft is compared to every encoded number, up to the point its status is determined.

Set the values in NCRSH/NTOW/NBAT equal to the number of encoded numbers in each matrix (vector). Refer to the comments between lines 430 and 447.

LTOW. This vector is used in a similar manner to LCRSH. The only difference is that the levels specified in the encoded numbers represent combinations of system failure levels which cause an aircraft to require towing. For example, if an aircraft will require towing when the level of systems 1 to 4 is greater than or equal to 3, then the encoded number would be included as 333300. All reasonable combinations should be included. Set NCRSH/NTOW/NBAT accordingly in line 443.

LBAT. This vector is similar to the above, except that it also considers the influence of battle damage on the possibility of crashing. This is done by adding a seventh digit to the encoded numbers. The battle damage digit is the most significant (first digit), and the next six are aircraft systems of the aircraft failure code. The numbers are encoded as in LCRSH and stored in the same fashion except an additional 9 is added for the crash code. Set NCRSH/NTOW/NBAT (line 443) according to the number of encoded numbers in each of the vectors.

Airfield Composition/Definition

Several variables are used to establish the composition and define the activities on the airfield. The three which require further definition are.

- (1) distances between points on the airfield,
- (2) rates of travel for aircraft and pilots, and
- (3) number of shelters, revetments, and dispersal parking spots per squadron.

The distances between points on the airfield are entered in the matrix DIST (lines 574 to 587). DIST is a two-dimensional array. The distance between point I and J is entered in array location DIST(I,J) and DIST(J,I). The location codes for DIST are contained in lines 558 to 572.

Rates of travel are also inputs to the model. Rates are used to determine travel times from point I to point J on the airfield for both pilots and aircraft. These values are entered in lines 593 to 595.

The third variable, WTYPE (lines 500 to 508), is used to specify the number of each type of parking space per squadron. Since NPARK is dimensioned to 50, the sum of each type of parking for a squadron should not exceed 50. If a user specifies the number of shelters, dispersed spaces, and

revetments, for a squadron, and the total is less than 50, the coding will then assume the remaining spaces, up to 50, are dispersed spaces in the open. The numbers in lines 500 to 508 are the standard scenario numbers.

Setting the Master Clock

There are two areas to be addressed in controlling the flow of aircraft with the Executive Network. The first area is establishing the hours of daylight for the three days of the model. The second area is scheduling when the major events are to be initiated.

For the first area, this is accomplished by specifying the time of sunrise and sunset, or civil twilight (this is where the operational day is defined, i.e., the number of hours during which flying operations are conducted). These times are specified relative to TNOW, the simulation time. For example, on line 647 of Subroutine INTLC, daylight times are set to 15.0, 1455.0, and 2895.0. These values indicate to the model that it becomes daylight at 15 minutes into the simulation, and then again when TNOW equals 1455 and 2895 minutes. The DUSK variable is set in a similar fashion on line 648.

The other area, major event scheduling, is handled with a two-dimensional matrix called MAJEVNT (lines 653 to 700). The specifications of this variable dictate the time at which each major event is to be initiated relative to TNOW. Up to thirteen events can be scheduled. The first location of each pair event(1,1), is the time for the event to occur, and the second location of the pair, Event(1,2), is the event specified. Events which can be scheduled include.

- 0 - Terminate the run
- 1 - Start scheduling flights
- 2 - Begin night parking
- 3 - Perform QKA Changeover
- 4 - Determine replacement Squadron requirements, and
reconfigure aircraft for the following day's frag
- 99 - not used

The user must specify the times relative to TNOW, and the events to be initiated. As an example, lines 677 and 678 cause the night parking routine to begin parking aircraft in shelters when TNOW is equal to 980.0. Since this matrix, MAJEVNT, controls the model at the macro level, great care should be taken in setting these values.

Other Comments

Most, but not all of the variables covered in this section were of a more complex nature than those covered in the main text. Some were added because there were additional comments which needed to be made to a possible user who was interested enough to peruse these notes. These notes were designed to complement Chapter III and Appendices A and B. Anyone intending to use the model should also refer to Annex A.

To further aid in execution of the model a sample day file from a run on the Aeronautical Systems Division, CDC 6600 system (CYBER 74) is included in Figure C.3. This is not a small, quickly executed model. It requires an input-output time of around 400 seconds, and central processor times of around 140 seconds on the CYBER 74. Close attention should be given to setting the variables to the desired values on the first try.

```

1 CSA NOS/BE L530C L530C-CMR1 07/13/81
21.21.30.RWM9NWC FROM CSA/9N
21.21.31.IP 00009600 WORDS - FILE INPUT , DC 04
21.21.31.RWM,CM250000,T400,IO400. T800845,MANN,B
21.21.31.OX4566,AFIT,AFIT,AFIT,91,91,91
21.21.34.ATTACH,PROCFIL,ID=A810171,SN=ASDAD.
21.21.34.PFN IS
21.21.34.PROCFIL
21.21.35.AT CY= 001 SN=ASDAD
21.21.35.BEGIN,NOSFILE.
21.21.35.RETURN,ZZZZZLB.
21.21.35.ATTACH,ZZZZZLB,IFSLIB,PW=----*,CY=999,ID
21.21.35.=A810171,SN=ASDAD.
21.21.36.LIBRARY,ZZZZZLB.
21.21.37.NOTIFY. NOSFILE VERSION 3 READY.
21.21.38. NOSFILE VERSION 3 READY.
21.21.38.RETURN,PROCFIL.
21.21.39.REVERT.
21.21.39.GET,F708BIN,ID=COVEY.
21.21.44.FILE NAME F708BIN HAS BEEN RETRIEVED
21.21.45.REWIND,F708BIN.
21.21.45.ATTACH,PROCFIL,SLAMPROC,ID=AFIT.
21.21.45.AT CY= 008 SN=AFIT
21.21.45.BEGIN,SLAM,,M=F708BIN,PL=100000.
21.21.46.IFE,NUM(0).EQ.0,NOPMD.
21.21.47.ELSE,NOPMD.
21.21.47.ATTACH,XXXSLAM,SLAMS,ID=AFIT,SN=AFIT.
21.21.47.AT CY= 001 SN=AFIT
21.21.47.IFE,NUM(F708BIN).EQ.1,MERGE.
21.21.48.ELSE,MERGE.
21.21.48.MAP,OFF.
21.21.49.SEGLOAD,I=SLAMSEC.
21.21.49.LOAD,F708BIN.
21.21.49.LOAD,XXXSLAM.
21.21.49.EXECUTE,,INPUT,OUTPUT,,,PL=100000.

```

Fig. C.3.1 Typical CYBER 74 Day File

```

21.22.09.    NON-FATAL LOADER ERRORS -
21.22.09.DUPLICATE PROGRAM NAME FROM FILE
21.22.09.PROGRAM SKIPPED --- MAIN
21.22.09.LAST FILE ACCESSED- XXXSLAM
21.22.09.    NON-FATAL LOADER ERRORS -
21.22.09.DUPLICATE PROGRAM NAME FROM FILE
21.22.09.PROGRAM SKIPPED --- EVENT
21.22.09.LAST FILE ACCESSED- XXXSLAM
21.22.09.    NON-FATAL LOADER ERRORS -
21.22.09.DUPLICATE PROGRAM NAME FROM FILE
21.22.09.PROGRAM SKIPPED --- INTLC
21.22.09.LAST FILE ACCESSED- XXXSLAM
21.22.09.    NON-FATAL LOADER ERRORS -
21.22.09.DUPLICATE PROGRAM NAME FROM FILE
21.22.09.PROGRAM SKIPPED --- OPUT
21.22.09.LAST FILE ACCESSED- XXXSLAM
21.22.09.    NON-FATAL LOADER ERRORS -
21.22.09.DUPLICATE PROGRAM NAME FROM FILE
21.22.09.PROGRAM SKIPPED --- USERF
21.22.09.LAST FILE ACCESSED- XXXSLAM
22.02.23.LOCKIN.
22.08.06.    STOP
22.08.06.    246700 MAXIMUM EXECUTION FL.
22.08.06.    128.774 CP SECONDS EXECUTION TIME.
22.08.07.ENDIF,MERGE.
22.08.08.ENDIF,NOPND.
22.08.08.REVERT.CCL
22.08.09.OP 00007040 WORDS - FILE OUTPUT , DC 40
22.08.09.MS 7296 WORDS ( 124032 MAX USED)
22.08.09.CPA 131.397 SEC.      107.078 ADJ.
22.08.09.IO 324.551 SEC.      96.067 ADJ.
22.08.09.CM 36109.804 KWS.    170.098 ADJ.
22.08.09.CRUS          373.244
22.08.09.COST          $      24.60
22.08.09.PP 231.949 SEC.    DATE 01/27/82
22.08.09.EJ END OF JOB, 9N T800845.

```

Fig. C.3.2 Typical CYBER 74 Day File

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
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19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Air Force Facilities Airports Computerized Simulation Targets Airfield Airbase Model		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This research effort was undertaken to investigate a methodology for determining the most critical elements on a fighter-bomber airbase with respect to sorties generated over a three-day period. The methodology is founded on a user definable computer simulation model written in SLAM (FORTRAN based) and supported by several FORTRAN routines. The remainder of the		

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methodology entails the use of factorial experimental designs for examining airfield element criticality. The airfield elements are the experimental factors. They are set to user specified levels according to the experimental design. The model produces a single response variable--sorties generated over a three-day period. Results are analyzed with common statistical techniques (Method of Contrasts, ANOVA, Duncan's Multiple Range Test). Special attention was placed on documentation of the model to insure ease of implementation by a user. Model usage is demonstrated with two experiments and their analysis. Because this methodology does not require Monte Carlo simulation of damage to the airfield, the determination of element criticality is straightforward. The lucrative targets on the airfield are then the most critical elements which can be effectively attacked with available weapons and delivery systems.

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