1/12

FIG. 1
PRIOR ART

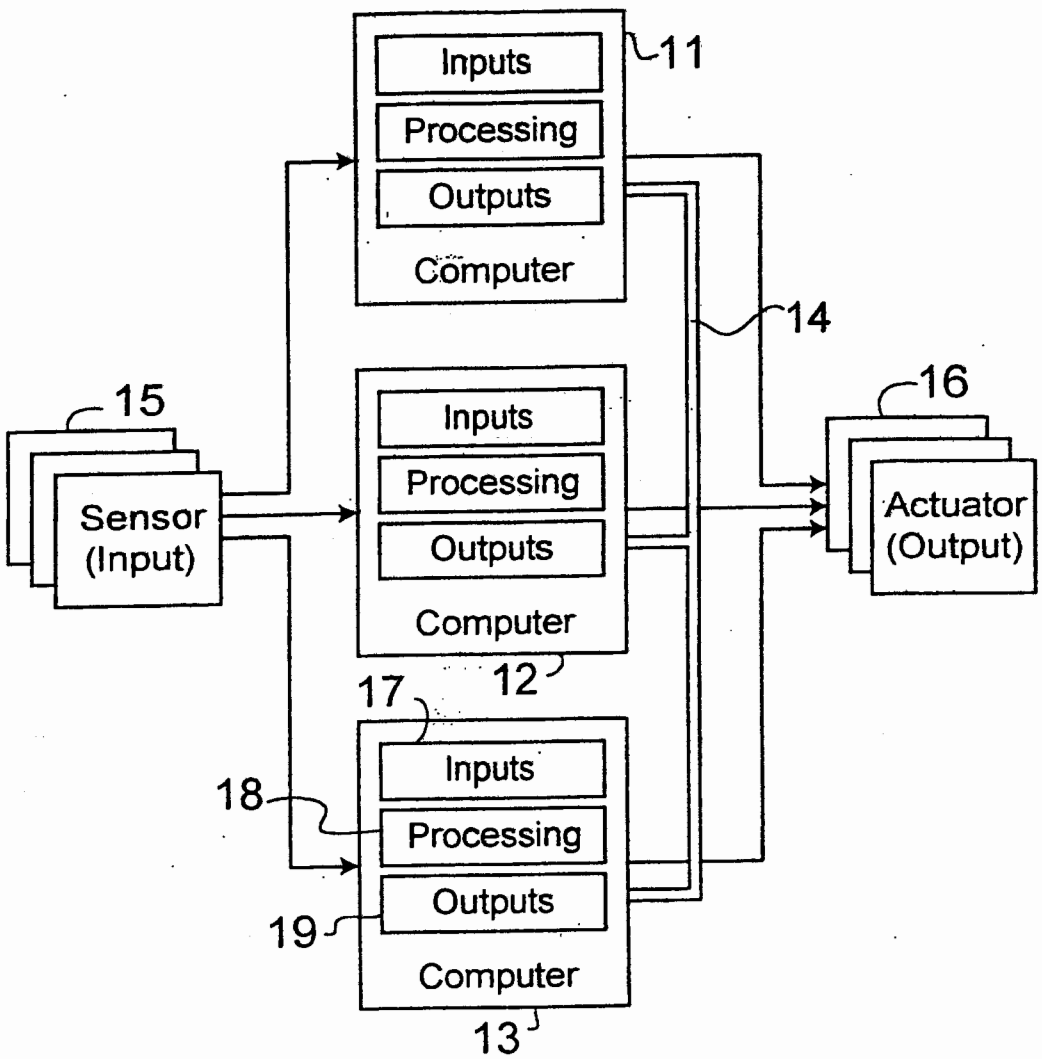


FIG. 2
PRIOR ART

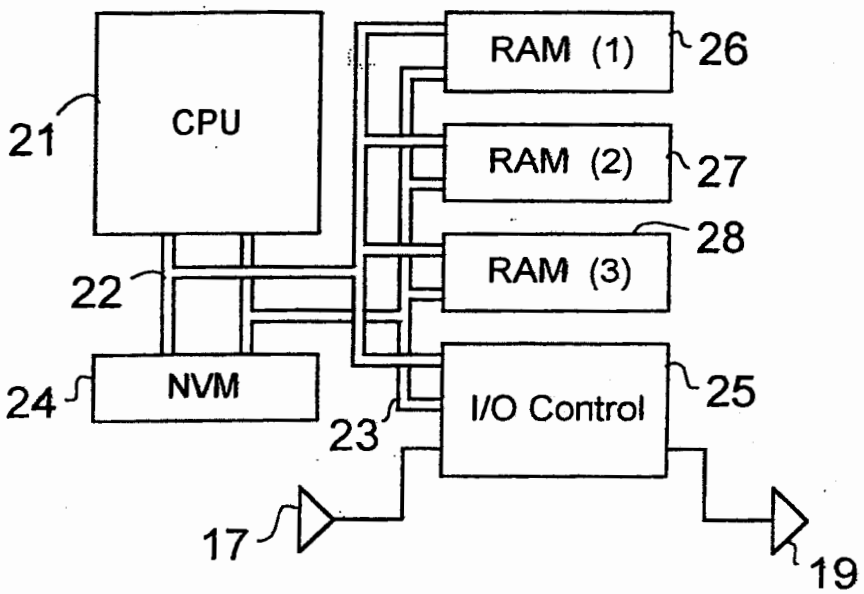


FIG. 3

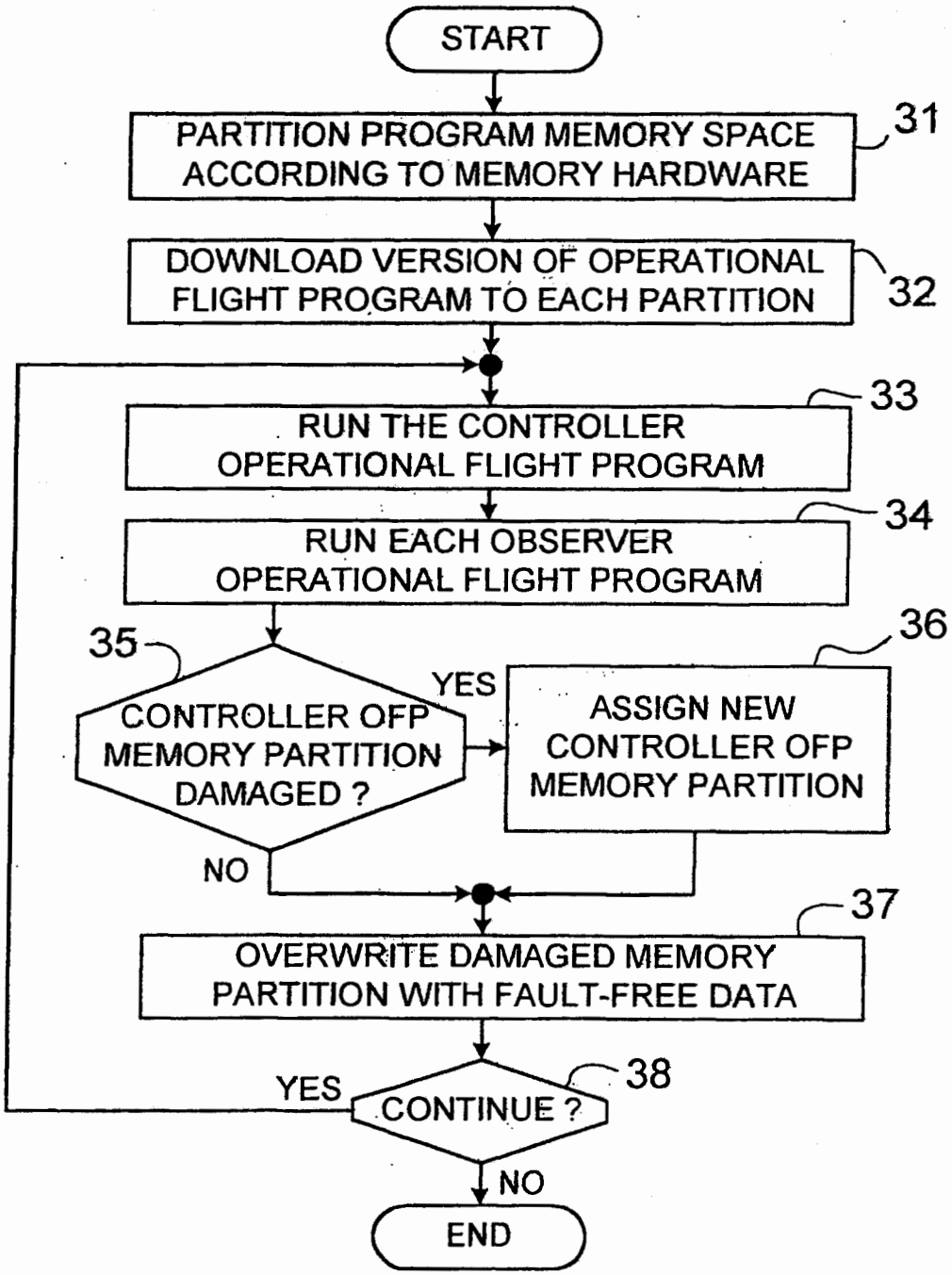

START
PARTITION PROGRAM MEMORY SPACE ACCORDING TO MEMORY HARDWARE
31
DOWNLOAD VERSION OF OPERATIONAL FLIGHT PROGRAM TO EACH PARTITION
32
RUN THE CONTROLLER OPERATIONAL FLIGHT PROGRAM
33
RUN EACH OBSERVER OPERATIONAL FLIGHT PROGRAM
34
35
CONTROLLER OFP MEMORY PARTITION DAMAGED ?
YES
36
ASSIGN NEW CONTROLLER OFP MEMORY PARTITION
NO
OVERWRITE DAMAGED MEMORY PARTITION WITH FAULT-FREE DATA
37
YES
CONTINUE ?
38
NO
END

FIG. 4

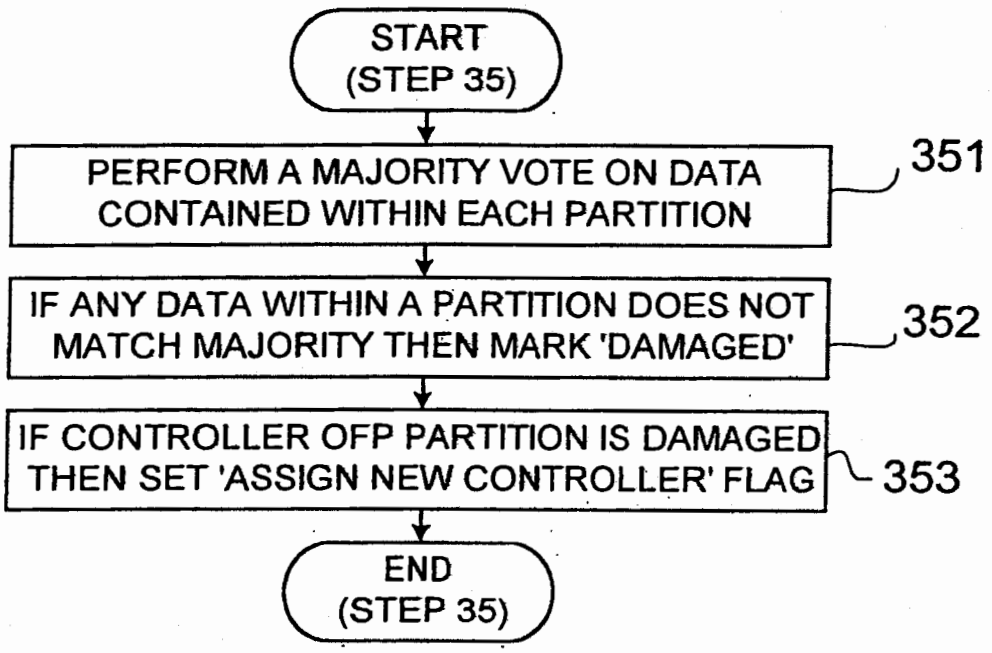
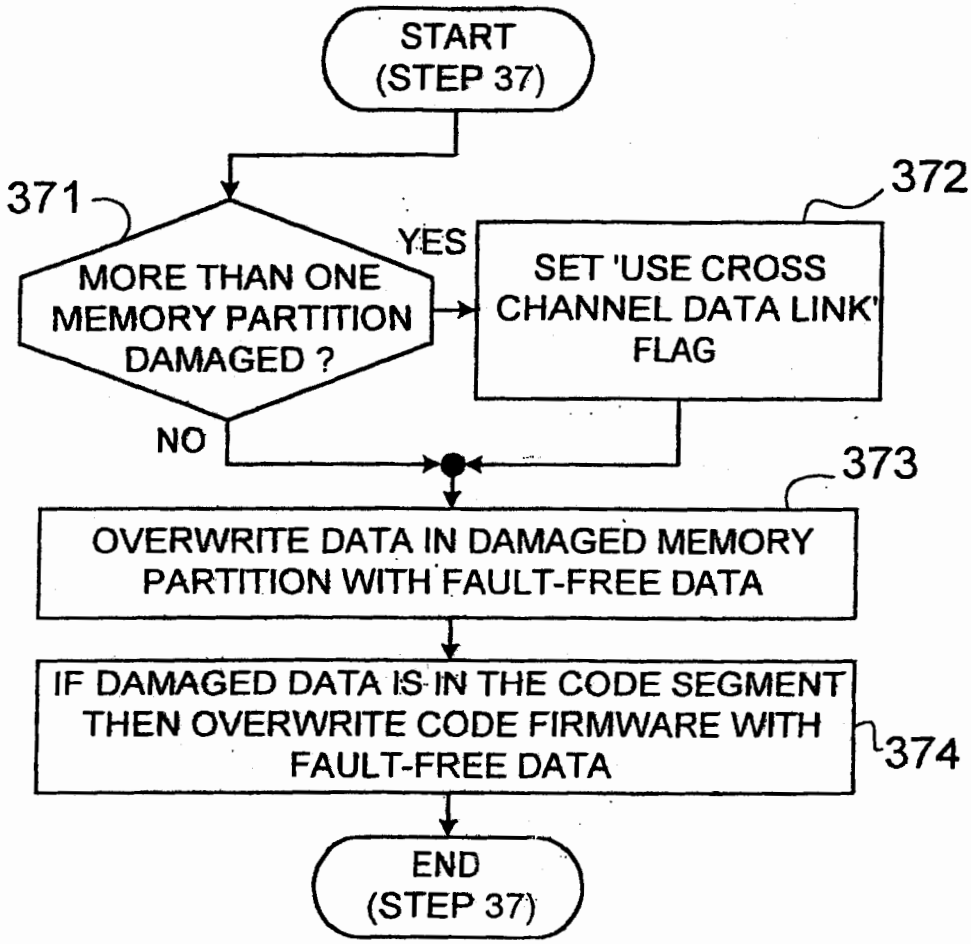

START
(STEP 35)
PERFORM A MAJORITY VOTE ON DATA CONTAINED WITHIN EACH PARTITION
351
IF ANY DATA WITHIN A PARTITION DOES NOT MATCH MAJORITY THEN MARK 'DAMAGED'
352
IF CONTROLLER OFP PARTITION IS DAMAGED THEN SET 'ASSIGN NEW CONTROLLER' FLAG
353
END
(STEP 35)

FIG. 5


START
(STEP 37)
371
MORE THAN ONE MEMORY PARTITION DAMAGED ?
YES
372
SET 'USE CROSS CHANNEL DATA LINK' FLAG
NO
373
OVERWRITE DATA IN DAMAGED MEMORY PARTITION WITH FAULT-FREE DATA
IF DAMAGED DATA IS IN THE CODE SEGMENT THEN OVERWRITE CODE FIRMWARE WITH FAULT-FREE DATA
374
END
(STEP 37)

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FIG. 6

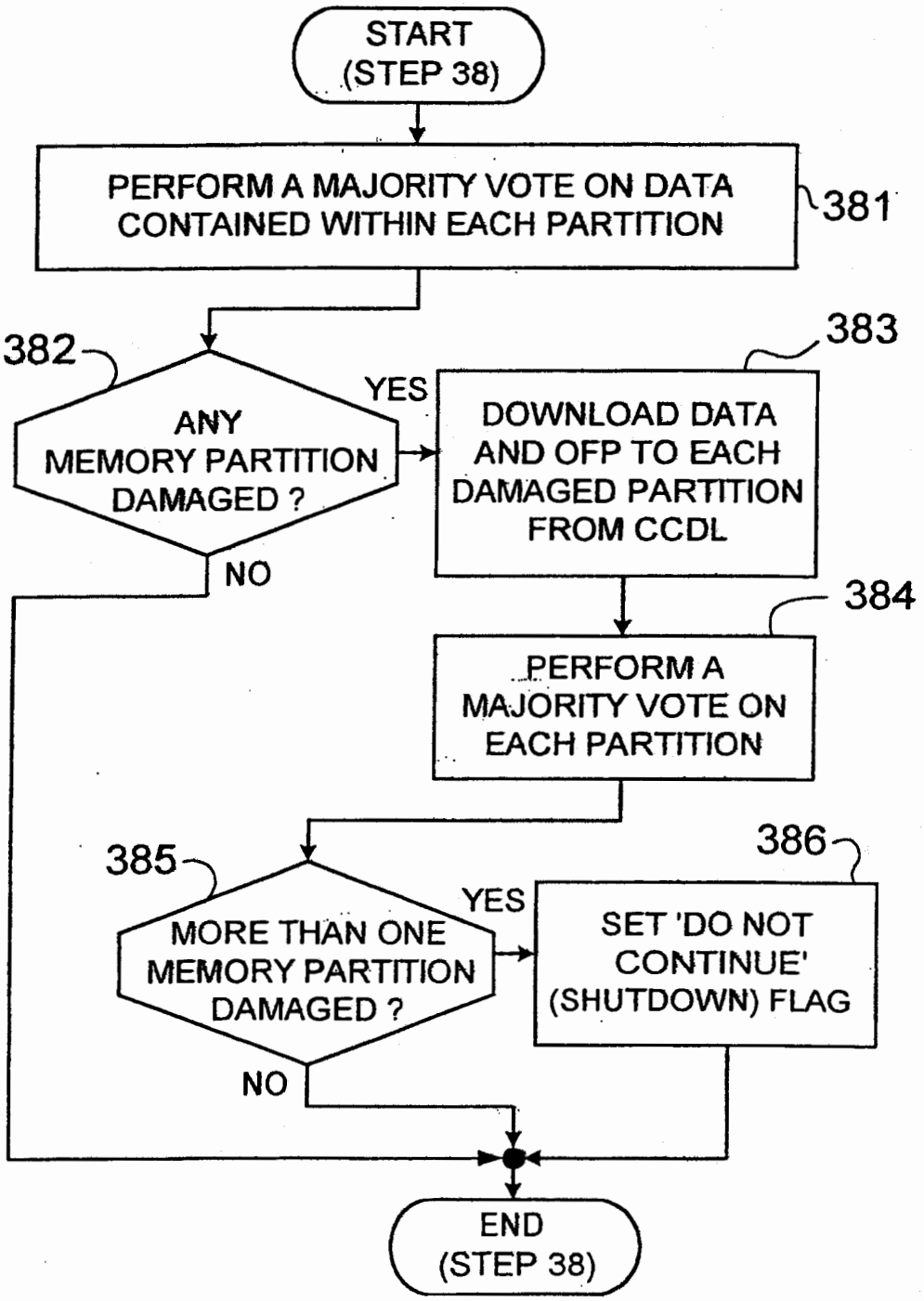

START
(STEP 38)
PERFORM A MAJORITY VOTE ON DATA CONTAINED WITHIN EACH PARTITION
381
382
ANY MEMORY PARTITION DAMAGED ?
YES
NO
383
DOWNLOAD DATA AND OFP TO EACH DAMAGED PARTITION FROM CCDL
384
PERFORM A MAJORITY VOTE ON EACH PARTITION
385
MORE THAN ONE MEMORY PARTITION DAMAGED ?
YES
NO
386
SET 'DO NOT CONTINUE' (SHUTDOWN) FLAG
END
(STEP 38)

FIG. 7

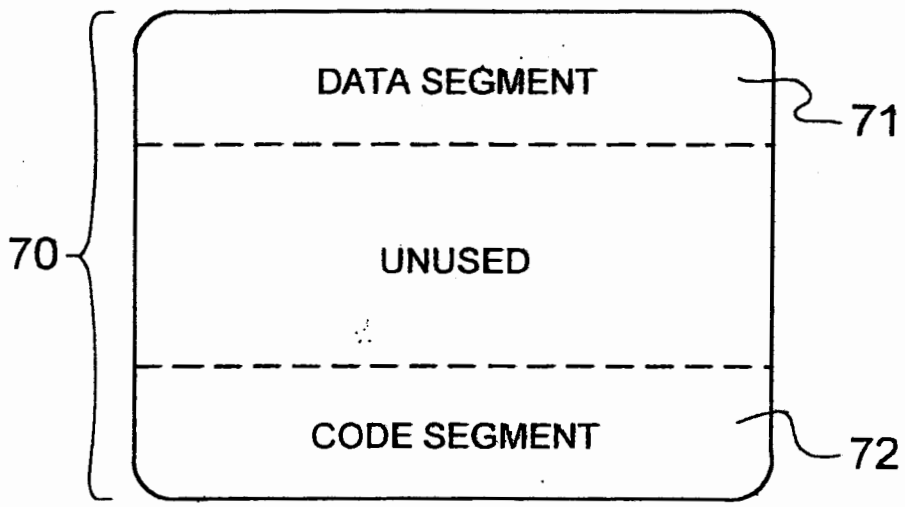


FIG. 8

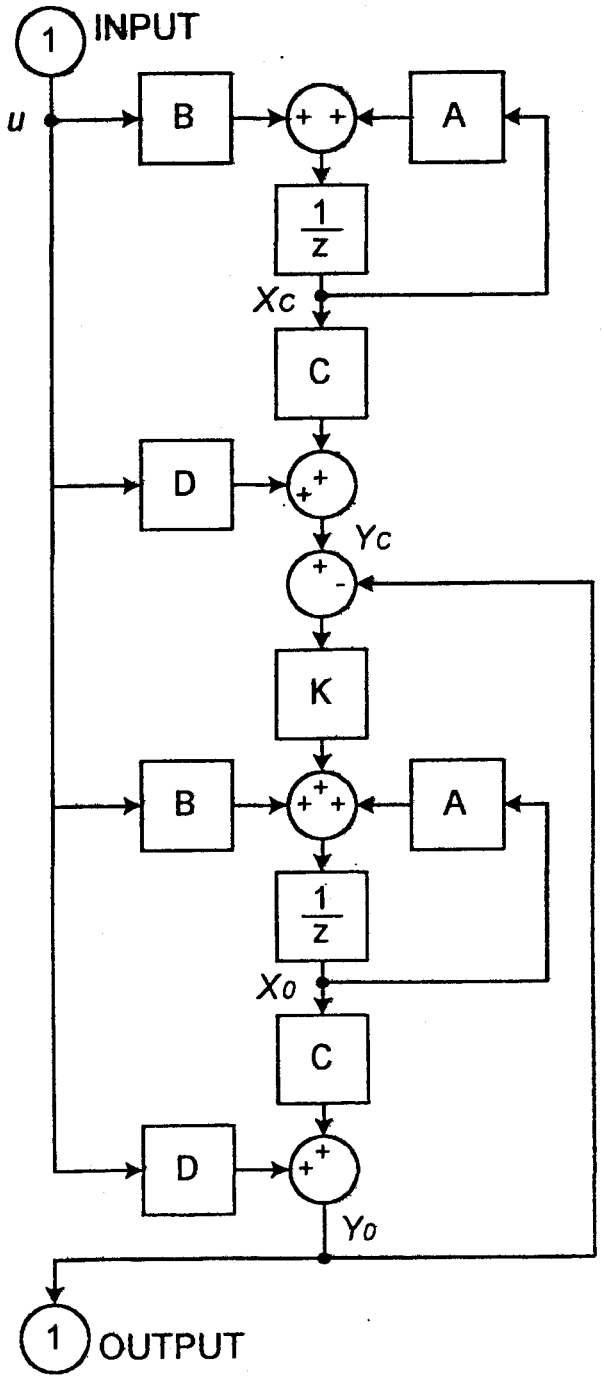


FIG. 9 Token of Output Priority (Memory Partition 1/2/3)

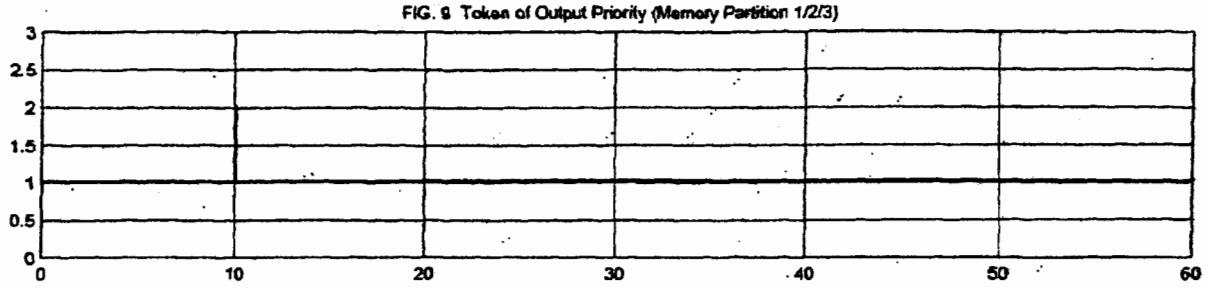


FIG. 10 Error Detection Flag To Memory Partition 1 (0: Fault Detected, 1: No Fault)

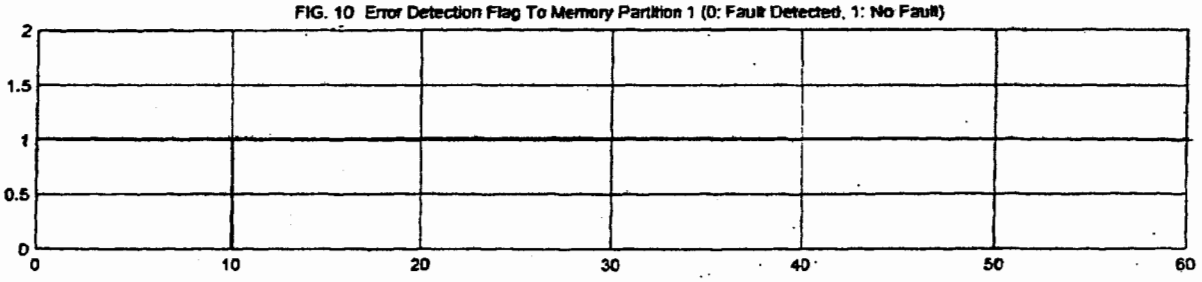


FIG. 11 Error Detection Flag To Memory Partition 2 (0: Fault Detected, 1: No Fault)

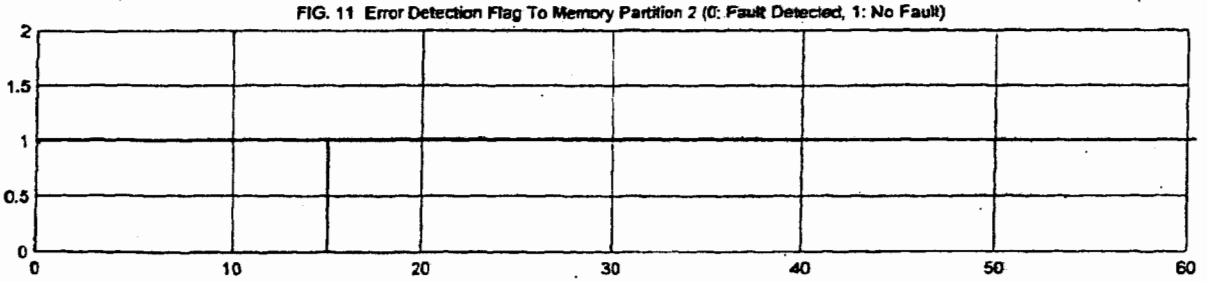


FIG. 12 Error Detection Flag To Memory Partition 3 (0: Fault Detected, 1: No Fault)

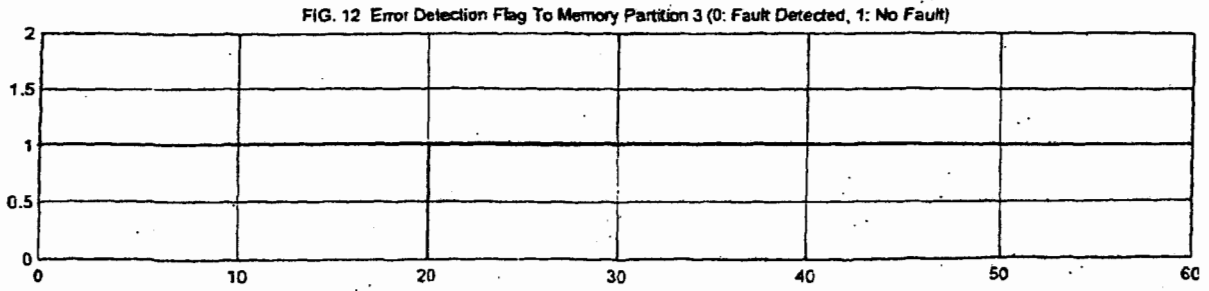


FIG. 13 Memory Recovery Flag in Memory Partition 1 (1: Do Recovery, 2: No Recovery)

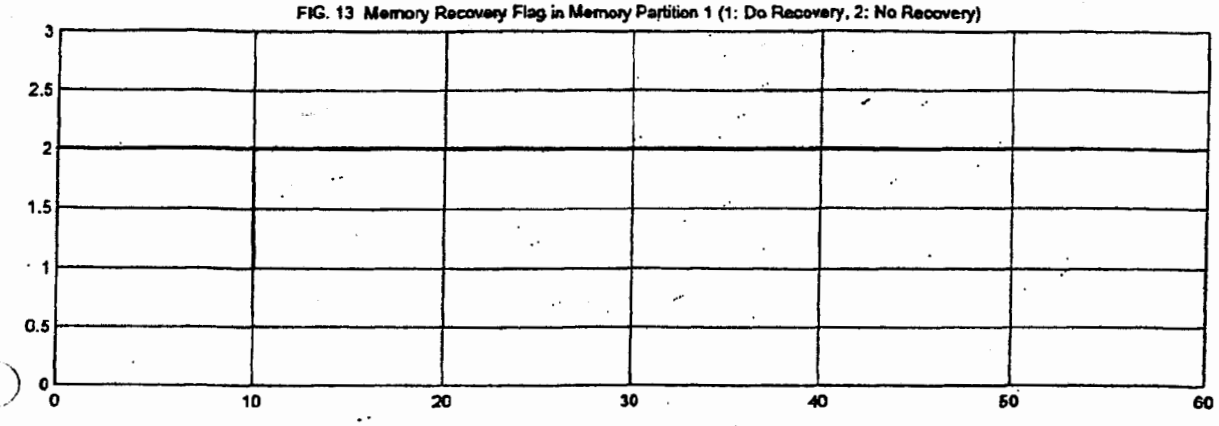


FIG. 14 Memory Recovery Flag in Memory Partition 2 (1: Do recovery, 2: No Recovery)

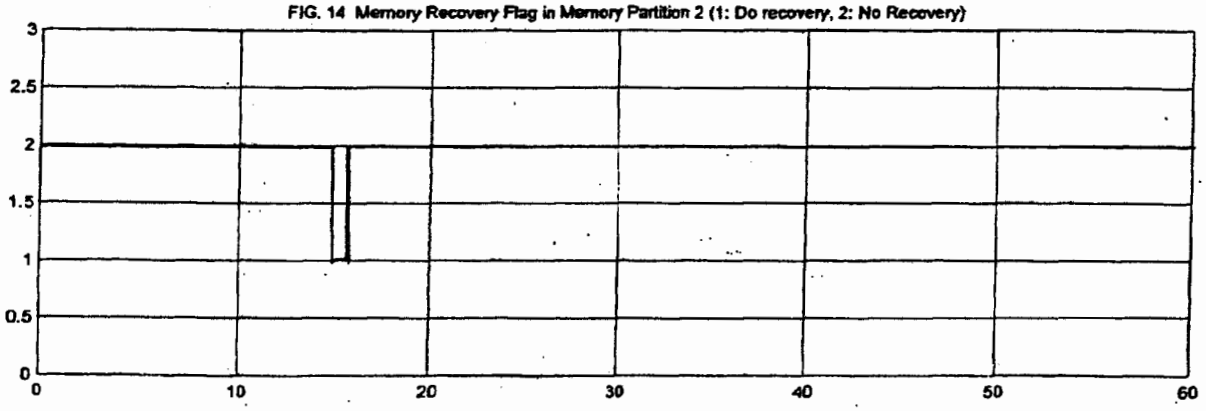


FIG. 15 Memory Recovery Flag in Memory Partition 3 (1: Do Recovery, 2: No Recovery)

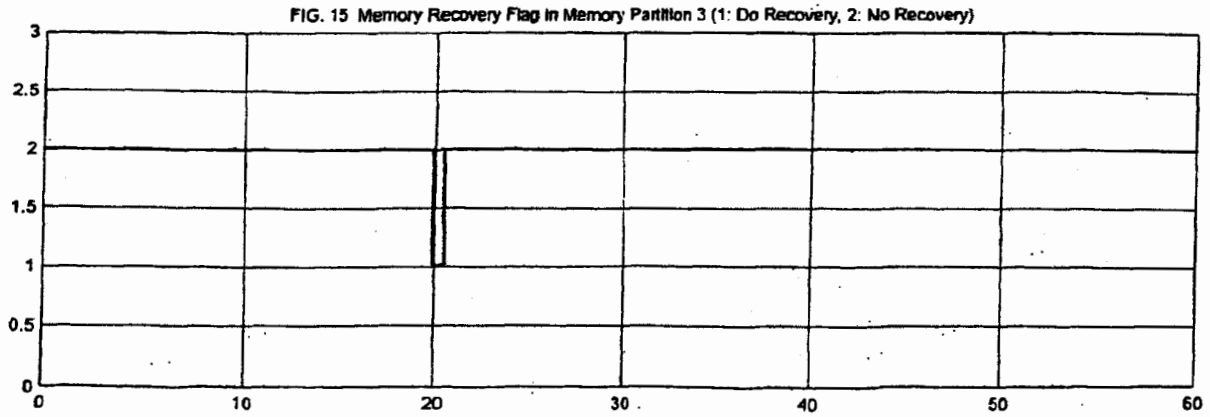


FIG. 16 Altitude vs Altitude Reference

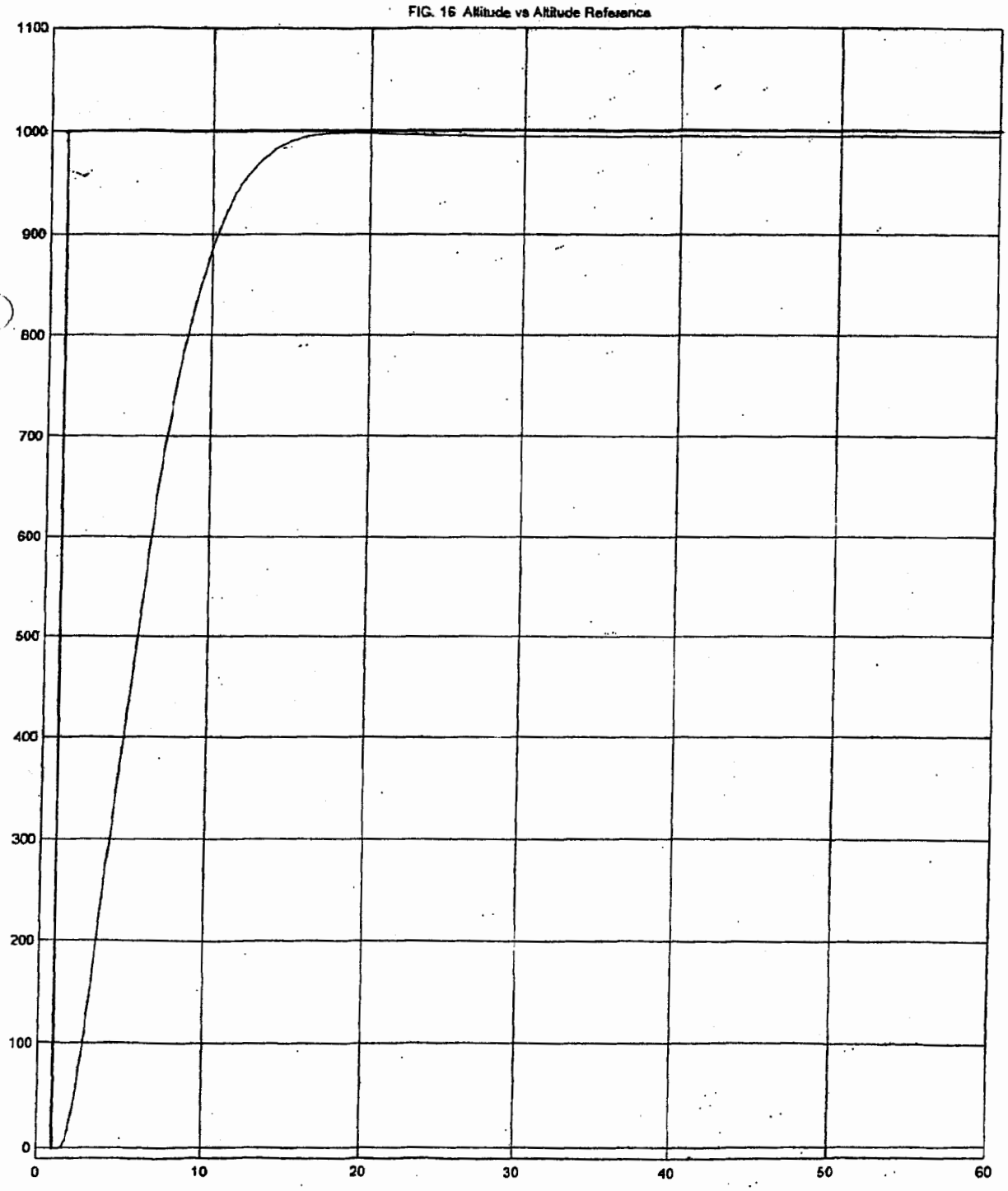
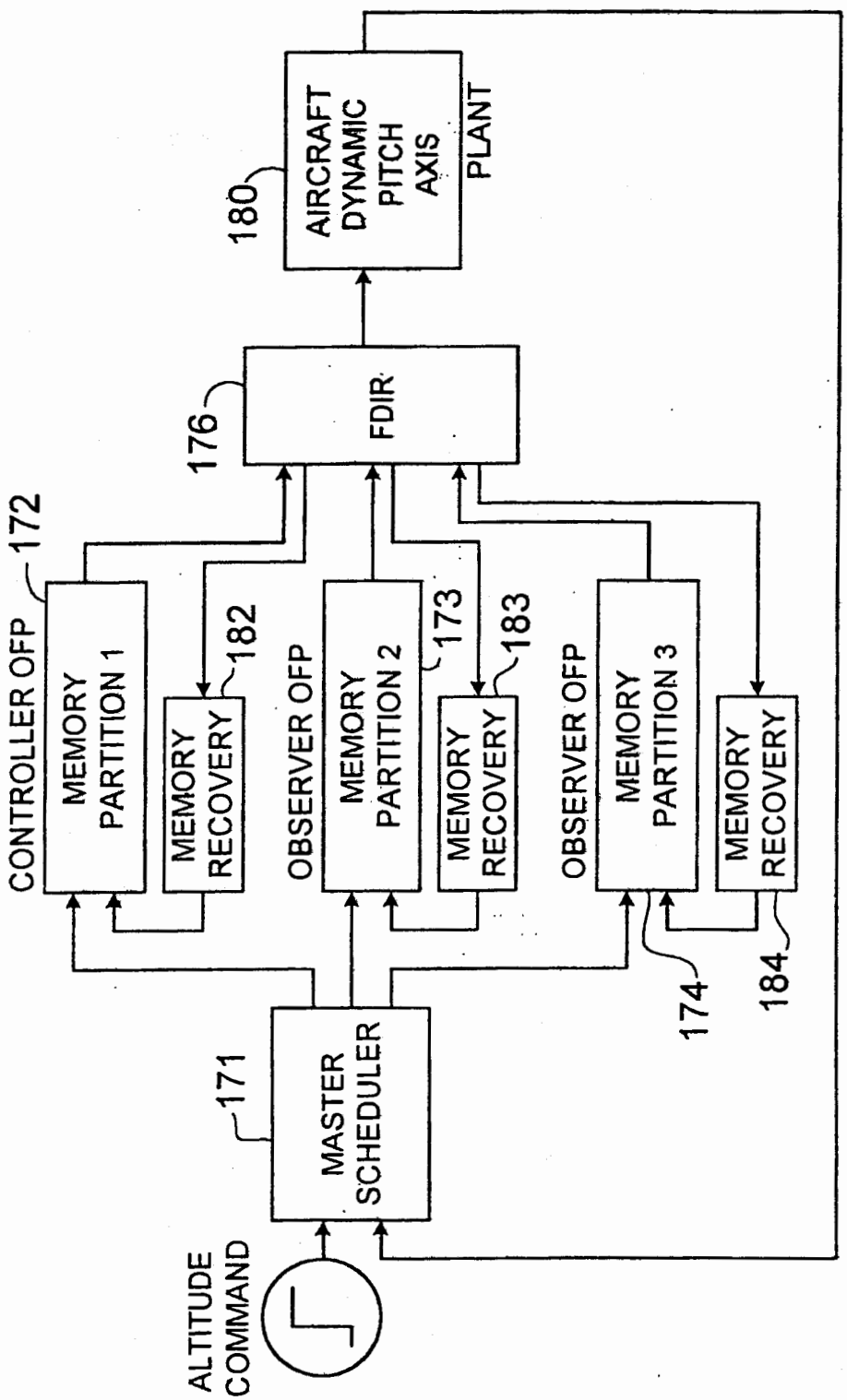


FIG. 17


ALTITUDE COMMAND
MASTER SCHEDULER
171
CONTROLLER OFP
MEMORY PARTITION 1
172
MEMORY RECOVERY
182
OBSERVER OFP
MEMORY PARTITION 2
173
MEMORY RECOVERY
183
OBSERVER OFP
MEMORY PARTITION 3
174
MEMORY RECOVERY
184
FDIR
176
AIRCRAFT DYNAMIC PITCH AXIS
180
PLANT