
 PROCESS EQUIPMENT FAILURE RESPONSE

ERROR	RESPONSE	ERROR	RESPONSE
MFS#1 communication failure	CONT	MFS#2 communication failure	CONT
MFS#1 in manual mode	SHLD	MFS#2 in manual mode	CONT
MFS#1 temp/presr interlock	CONT	MFS#2 temp/presr interlock	CONT
MFS#1 ambient temp too high	CONT	MFS#2 ambient temp too high	CONT
MFS#1 activation error	CONT	MFS#2 activation error	CONT
MFS#1 leak error	CONT	MFS#2 leak error	CONT
MFS#1 fault	CONT	MFS#2 fault	CONT
TCU communication failure	CONT	BOATL communication failure	CONT
TCU in manual mode	CONT	BOATL in manual mode	CONT
TCU fault	CONT	BOATL fault	CONT

If powerfail duration is less than 3 sec, then CONT; else SHLD.

TOLERANCE/FAULT RESPONSE

SIGNAL	LO-TOL	HI-TOL	DELAY	DURATION	GOTO (if out-of-tolerance)
N2CARR	30.0	30.0 SCCM	30	4 SEC	CONT
N2	300.	300. SCCM	30	4 SEC	CONT
TEMPL	2.0	2.0 DEGC	30	4 SEC	CONT
TEMPC	2.0	2.0 DEGC	30	4 SEC	CONT
TEMPS	2.0	2.0 DEGC	30	4 SEC	CONT

IDLE CONDITION

STEP: IDLE COMMENT: IDLE STATE
TEMPL = 550.0 DEGC
TEMPC = 550.0 DEGC
TEMPS = 550.0 DEGC
N2 = 1000. SCCM
BOATSPD = 10.0 IPM
BOATIN = ON
N2CARR = 500.0 SCCM

PROCESS RUN SEQUENCE

STEP: STRT COMMENT: RUN: 1ST STEP TIME: 00.00.15
TEMPL = 550.0 DEGC
TEMPC = 550.0 DEGC
TEMPS = 550.0 DEGC
N2 = 1000. SCCM
If TEMPL out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPC out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPS out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If LVLALM = ON then goto ABRT
If TMPALM = ON then goto ABRT
If EVENT = ON then goto CONT

STEP: 0005 COMMENT: BLOUT,LOAD TIME: 00.00.15
TEMPL = N/C DEGC
TEMPC = N/C DEGC
TEMPS = N/C DEGC
N2 = 1000. SCCM
BOATOUT = ON
BOATSPD = 10.0 IPM
If TEMPL out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPC out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPS out-of-tolerance then goto CONT (NO TOLERANCE ALARM)

STEP: 0010 COMMENT: PULL BOATS OUT TIME: 00.06.00
TEMPL = N/C DEGC
TEMPC = N/C DEGC
TEMPS = N/C DEGC
N2 = 5000. SCCM
BOATOUT = ON
BOATSPD = N/C IPM
If TEMPL out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPC out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPS out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If EVENT = ON then goto 0020

STEP: 0020 COMMENT: LOAD WAFERS TIME: 00.15.00
TEMPL = N/C DEGC

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      TEMPC = N/C   DEGC
      TEMPS = N/C   DEGC
      N2 = 4000. SCCM
BOATOUT = ON
BOATSPD = N/C     IPM
      SONIC = ON
If EVENT = ON then goto BTIN
If TEMPL out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPC out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPS out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
STEP: BTIN          COMMENT: PUSH BOATS IN      TIME: 00.06.00
      TEMPL = N/C   DEGC
      TEMPC = N/C   DEGC
      TEMPS = N/C   DEGC
      N2 = 5000. SCCM
      BOATIN = ON
      BOATSPD = N/C     IPM
If TEMPL out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPC out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPS out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If EVENT = ON then goto 0030
STEP: 0030          COMMENT: TEMP STABILIZE     TIME: 00.10.00
      TEMPL = N/C   DEGC
      TEMPC = N/C   DEGC
      TEMPS = N/C   DEGC
      N2 = 2000. SCCM
If TEMPL out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPC out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPS out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If EVENT = ON then goto 0040
STEP: 0040          COMMENT: RAMP TO 1150C      TIME: 01.20.00
      TEMPL = 1150.0 DEGC
      TEMPC = 1150.0 DEGC
      TEMPS = 1150.0 DEGC
      RMPRATE = 10.0 D/M
      O2LO = 60. SCCM
      N2 = 3000. SCCM
STEP: 0050          COMMENT: STABILIZE         TIME: 00.05.00
      TEMPL = N/C   DEGC
      TEMPC = N/C   DEGC
      TEMPS = N/C   DEGC
      RMPRATE = 10.0 D/M
      O2LO = 60. SCCM
      N2 = 3000. SCCM
STEP: 0070          COMMENT: DRYOX            TIME: 04.00.00
      TEMPL = N/C   DEGC
      TEMPC = N/C   DEGC
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      TEMPS = N/C   DEGC
      O2HI  = 3000. SCCM
STEP: 0075      COMMENT: ANNEAL          TIME: 01.00.00
      TEMPL = N/C   DEGC
      TEMPC = N/C   DEGC
      TEMPS = N/C   DEGC
      N2    = 3000. SCCM
STEP: 0080      COMMENT: TEMP RAMP DOWN  TIME: 01.00.00
      TEMPL = 550.0 DEGC
      TEMPC = 550.0 DEGC
      TEMPS = 550.0 DEGC
      N2    = 2500. SCCM
      SONIC = ON
      If EVENT = ON then goto BTOT
      If TEMPL out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
      If TEMPC out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
      If TEMPS out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
STEP: BTOT      COMMENT: HOLD FOR EVENT  TIME: 00.00.00
      TEMPL = 550.0 DEGC
      TEMPC = 550.0 DEGC
      TEMPS = 550.0 DEGC
      N2    = 2500. SCCM
      SONIC = ON
      If EVENT = ON then goto 0100
STEP: 0100      COMMENT: PULL BOATS OUT   TIME: 00.06.00
      TEMPL = 400.0 DEGC
      TEMPC = 500.0 DEGC
      TEMPS = 480.0 DEGC
      N2    = 4000. SCCM
      BOATOUT = ON
      BOATSPD = 10.0 IPM
      If TEMPL out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
      If TEMPC out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
      If TEMPS out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
STEP: 0150      COMMENT: UNLOAD WAFERS    TIME: 00.15.00
      TEMPL = N/C   DEGC
      TEMPC = N/C   DEGC
      TEMPS = N/C   DEGC
      N2    = 4000. SCCM
      SONIC = ON
      BOATOUT = ON
      BOATSPD = N/C   IPM
      If EVENT = ON then goto 0160
      If TEMPL out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
      If TEMPC out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
      If TEMPS out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
STEP: 0160      COMMENT: PUSH BOATS IN    TIME: 00.06.00
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      TEMPL = 550.0 DEGC
      TEMPC = 550.0 DEGC
      TEMPS = 550.0 DEGC
      N2 = 4000. SCCM
BOATSPD = N/C      IPM
BOATIN = ON
If TEMPL out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPC out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPS out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
STEP: 0170      COMMENT: END      TIME: 00.00.10
      TEMPL = N/C      DEGC
      TEMPC = N/C      DEGC
      TEMPS = N/C      DEGC
      N2 = 4000. SCCM
BOATSPD = N/C      IPM
BOATIN = ON
If TEMPL out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPC out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
If TEMPS out-of-tolerance then goto CONT (NO TOLERANCE ALARM)
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SPECIAL HOLD STEP

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STEP: SHLD      COMMENT: SPECIAL HOLD
      TEMPL = N/C      DEGC
      TEMPC = N/C      DEGC
      TEMPS = N/C      DEGC
      N2CARR = 500.0 SCCM
      N2 = 2500. SCCM
BOATSPD = 5.0      IPM
      SONIC = ON
      BOATIN = ON
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ABORT SEQUENCE

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STEP: ABRT      COMMENT: ABRT: 1ST STEP      TIME: 00.15.00
      TEMPL = 550.0 DEGC
      TEMPC = 550.0 DEGC
      TEMPS = 550.0 DEGC
      BOATIN = ON
      BOATSPD = 5.0      IPM
      N2 = 5000. SCCM
      If EVENT = ON then goto ABR1
      N2CARR = 100.0 SCCM
STEP: ABR1      COMMENT: ABORT      TIME: 00.00.05
      TEMPL = 550.0 DEGC
      TEMPC = 550.0 DEGC
      TEMPS = 550.0 DEGC
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N2 = 5000. SCCM

N2CARR = 500.0 SCCM

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