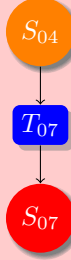
**RULE-01**

IF (S_{00}) Engine overheats

AND (T_{01}) Engine itself is not the cause

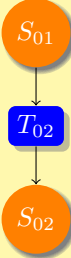
THEN (S_{01}) Cooling system is responsible for overheat

**RULE-07**

IF (S_{04}) Loss of coolant occurs in FW loop with pump operating

AND (T_{07}) Ammeter reading at motor of FW coolant pump is abnormal

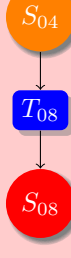
THEN (S_{07}) Power decrease in motor of FW coolant pump is responsible for overheat

**RULE-02**

IF (S_{01}) Cooling system is responsible for overheat

AND (T_{02}) Pressure gauge reading of FW is low

THEN (S_{02}) Loss of coolant occurs in FW loop

**RULE-08**

IF (S_{04}) Loss of coolant occurs in FW loop with pump operating

AND (T_{08}) Level gauge reading of expansion tank is low

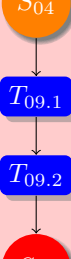
THEN (S_{08}) There is a low water level in the expansion tank and bubbles in FW loop are responsible for overheat

**RULE-03**

IF (S_{02}) Loss of coolant occurs in FW loop

AND (T_{03}) FW coolant pump is not operating

THEN (S_{03}) Stopped FW coolant pump is responsible for overheat

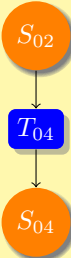
**RULE-09**

IF (S_{04}) Loss of coolant occurs in FW loop with pump operating

AND ($T_{09.1}$) Pressure gauge reading at delivery valve of FW coolant is low

AND ($T_{09.2}$) Pressure gauge reading at suction valve of FW coolant pump is normal

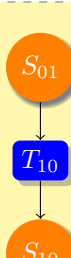
THEN (S_{09}) Impeller damage in FW coolant pump is responsible for overheat

**RULE-04**

IF (S_{02}) Loss of coolant occurs in FW loop

AND (T_{04}) FW coolant pump is operating

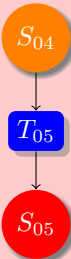
THEN (S_{04}) Loss of coolant occurs in FW loop with pump operating

**RULE-10**

IF (S_{01}) Cooling system is responsible for overheat

AND (T_{10}) Pressure gauge reading of FW is normal

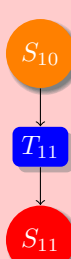
THEN (S_{10}) Enough coolant circulates in FW loop

**RULE-05**

IF (S_{04}) Loss of coolant occurs in FW loop with pump operating

AND (T_{05}) Pressure gauge reading at suction valve of FW coolant pump is low

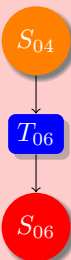
THEN (S_{05}) Closed suction valve of FW coolant pump is responsible for overheat

**RULE-11**

IF (S_{10}) Enough coolant circulates in FW loop

AND (T_{11}) Warm-up steam valve is open

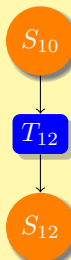
THEN (S_{11}) Failure to close warm-up valve after startup of engine is responsible for overheat

**RULE-06**

IF (S_{04}) Loss of coolant occurs in FW loop with pump operating

AND (T_{06}) Pressure gauge reading at delivery valve of FW coolant pump is high

THEN (S_{06}) Closed delivery valve of FW coolant pump is responsible for overheat

**RULE-12**

IF (S_{10}) Enough coolant circulates in FW loop

AND (T_{12}) Temperature reading of FW at exit of heat exchanger is high

THEN (S_{12}) Heat exchanger is ineffective

S_{12}

T_{13}

S_{13}

RULE-13

IF (S_{12}) Heat exchanger is ineffective
AND (T_{13}) Temperature reading of SW
at exit of heat exchanger is low
THEN (S_{13}) Fouled heat exchanger and
hence poor heat transfer is responsible for
overheat

S_{17}

T_{18}

S_{18}

RULE-18

IF (S_{17}) Loss of coolant occurs in SW
loop with pump operating
AND (T_{18}) Pressure gauge reading of SW
is high
THEN (S_{18}) SW discharge valve is closed

S_{12}

T_{14}

S_{14}

RULE-14

IF (S_{12}) Heat exchanger is ineffective
AND (T_{14}) Temperature reading of SW
at exit of heat exchanger is high
THEN (S_{14}) Loss of coolant occurs in
SW loop

S_{17}

T_{19}

S_{19}

RULE-19

IF (S_{17}) Loss of coolant occurs in SW
loop with pump operating
AND (T_{19}) Pressure gauge reading at
suction valve of SW coolant pump is low
THEN (S_{19}) Blocked strainer or closed
suction valve of SW coolant pump is re-
sponsible for overheat

S_{14}

T_{15}

S_{15}

RULE-15

IF (S_{14}) Loss of coolant occurs in SW
loop
AND (T_{15}) SW control valve is closed
THEN (S_{15}) Closed SW control valve is
responsible for overheat

S_{17}

T_{20}

S_{20}

RULE-20

IF (S_{17}) Loss of coolant occurs in SW
loop with pump operating
AND (T_{20}) Pressure gauge reading at de-
livery valve of SW coolant pump is high
THEN (S_{20}) Closed delivery valve of SW
coolant pump is responsible for overheat

S_{14}

T_{16}

S_{16}

RULE-16

IF (S_{14}) Loss of coolant occurs in SW
loop
AND (T_{16}) SW coolant pump is not oper-
ating
THEN (S_{16}) Stoppage in SW coolant
pump is responsible for overheat

S_{17}

T_{21}

S_{21}

RULE-21

IF (S_{17}) Loss of Coolant occurs in SW
loop with pump operating
AND (T_{21}) Ampere meter reading of mo-
tor of SW coolant pump is abnormal
THEN (S_{21}) Power decrease of motor of
SW coolant pump is responsible for over-
heat

S_{14}

T_{17}

S_{17}

RULE-17

IF (S_{14}) Loss of coolant occurs in SW
loop
AND (T_{17}) SW coolant pump is operat-
ing
THEN (S_{17}) Loss of coolant occurs in
SW loop with pump operating

S_{17}

$T_{22.1}$

$T_{22.2}$

S_{22}

RULE-22

IF (S_{17}) Loss of coolant occurs in SW
loop with pump operating
AND ($T_{22.1}$) Pressure gauge reading at
delivery valve of SW coolant pump is low
AND ($T_{22.2}$) Pressure gauge reading at
suction valve of SW coolant pump is nor-
mal
THEN (S_{22}) Impeller damage in SW
coolant pump is responsible for overheat