1. DESIGN VERIFICATION REPORT

1.1. check messages

```
=== begin tracability analysis : Tue Feb 27 18:25:49 WEST 2018

Halt. Program terminated normally
=== end tracability analysis : Tue Feb 27 18:25:50 WEST 2018
```

1.2. Coverage

```
REQUIREMENTS COVERAGE ANALYSIS

1- List of requirements covered by no entity:     NONE

2- List of derived requirements:     NONE

3- List of unknown requirements:     NONE

4- List of entities covering no requirements:
    Operation FG_thread.AircraftRoll
    Operation FG_thread.AircraftPitch
    Operation FG_thread.DisplayLeftFD
    Operation FG_thread.DisplayRightFD
    Operation FG_thread.APGuidanceRequest
    Operation FG_thread.LeftFDOn
    Operation FG_thread.RightFDOn
    Operation AP_thread.AircraftRoll
    Operation AP_thread.AircraftPitch
    Operation AP_thread.EngageAP
    Operation AP_thread.APRollGuidance
    Operation AP_thread.APPitchGuidance
    Module: FCI_thread
    Operation CSA_thread.APOn
    Module: AHS_Thread
    Operation PFD_thread.FDOn
    Operation PFD_thread.FCSFailed
    Operation PFD_thread.APStatus
    Operation RightPFD.FDOn
    Operation RightPFD.FCSFailed
    Operation RightPFD.APStatus
```

1.3. ERMatrix

```
ENTITIES-REQUIREMENTS MATRIX


In Module: FlightControlSystem
----------------
Other sections cover:     NONE

In Module: FCS
----------------
Operation FCS.LeftFDOn covers:     NONE
Operation FCS.AircraftRoll covers:     NONE
Operation FCS.AircraftPitch covers:     NONE
Operation FCS.RollGuidance covers:
    REQ-FCS-1 (operation spec. description (text))
```

```
Operation FCS.PitchGuidance covers:
    REQ-FCS-1 (operation spec. description (text))
Operation FCS.FCSFailed covers:
    REQ-FCS-3 (operation spec. description (text))
Operation FCS.APStatus covers:
    REQ-FCS-5 (operation spec. description (text))
Operation FCS.RollActuator covers:
    REQ-FCS-4 (operation spec. description (text))
Operation FCS.PitchActuator covers:
    REQ-FCS-4 (operation spec. description (text))
Operation FCS.DisplayLeftFD covers:    NONE
Operation FCS.DisplayRightFD covers:    NONE
Operation FCS.SyncFD covers:
    REQ-FCS-2 (operation spec. description (text))
Operation FCS.EngageAP covers:
    REQ-FCS-2 (operation spec. description (text))
Operation FCS.RightFDOn covers:    NONE
Other sections cover:    NONE


In Module: FG
----------------
Operation FG.AircraftRoll covers:    NONE
Operation FG.AircraftPitch covers:    NONE
Operation FG.DisplayLeftFD covers:    NONE
Operation FG.DisplayRightFD covers:    NONE
Operation FG.SyncFD covers:
    REQ-FG-2 (operation spec. description (text))
Operation FG.APGuidanceRequest covers:    NONE
Operation FG.APRollGuidance covers:
    REQ-FG-3 (operation spec. description (text))
Operation FG.APPitchGuidance covers:
    REQ-FG-3 (operation spec. description (text))
Operation FG.RollGuidance covers:
    REQ-FG-1 (operation spec. description (text))
Operation FG.PitchGuidance covers:
    REQ-FG-1 (operation spec. description (text))
Operation FG.LeftFDOn covers:    NONE
Operation FG.RightFDOn covers:    NONE
Operation FG.FCSFailed covers:
    REQ-FG-4 (operation spec. description (text))
Other sections cover:    NONE


In Module: FG_thread
----------------
Operation FG_thread.AircraftRoll covers:    NONE
Operation FG_thread.AircraftPitch covers:    NONE
Operation FG_thread.DisplayLeftFD covers:    NONE
Operation FG_thread.DisplayRightFD covers:    NONE
Operation FG_thread.SyncFD covers:
    REQ-FG-2 (operation spec. description (text))
Operation FG_thread.APGuidanceRequest covers:    NONE
Operation FG_thread.APRollGuidance covers:
    REQ-FG-3 (operation spec. description (text))
Operation FG_thread.APPitchGuidance covers:
    REQ-FG-3 (operation spec. description (text))
Operation FG_thread.RollGuidance covers:
    REQ-FG-1 (operation spec. description (text))
Operation FG_thread.PitchGuidance covers:
    REQ-FG-1 (operation spec. description (text))
Operation FG_thread.LeftFDOn covers:    NONE
```

```
Operation FG_thread.RightFDOn covers:    NONE
Operation FG_thread.FCSFailed covers:
    REQ-FG-4 (operation spec. description (text))
Other sections cover:    NONE


In Module: AP
----------------
Operation AP.AircraftRoll covers:    NONE
Operation AP.AircraftPitch covers:    NONE
Operation AP.APStatus covers:
    REQ-AP-2 (operation spec. description (text))
Operation AP.RollActuatorCommand covers:
    REQ-AP-1 (operation spec. description (text))
Operation AP.PitchActuatorCommand covers:
    REQ-AP-1 (operation spec. description (text))
Operation AP.EngageAP covers:    NONE
Operation AP.APGuidanceRequest covers:
    REQ-AP-3 (operation spec. description (text))
Operation AP.APRollGuidance covers:    NONE
Operation AP.APPitchGuidance covers:    NONE
Other sections cover:    NONE


In Module: AP_thread
----------------
Operation AP_thread.AircraftRoll covers:    NONE
Operation AP_thread.AircraftPitch covers:    NONE
Operation AP_thread.APStatus covers:
    REQ-AP-2 (operation spec. description (text))
Operation AP_thread.RollActuatorCommand covers:
    REQ-AP-1 (operation spec. description (text))
Operation AP_thread.PitchActuatorCommand covers:
    REQ-AP-1 (operation spec. description (text))
Operation AP_thread.EngageAP covers:    NONE
Operation AP_thread.APGuidanceRequest covers:
    REQ-AP-3 (operation spec. description (text))
Operation AP_thread.APRollGuidance covers:    NONE
Operation AP_thread.APPitchGuidance covers:    NONE
Other sections cover:    NONE


In Module: FCI
----------------
Operation FCI.DisplayLeftFD covers:    NONE
Operation FCI.DisplayRightFD covers:    NONE
Operation FCI.SyncFD covers:    NONE
Operation FCI.EngageAP covers:    NONE
Other sections cover:    NONE


In Module: FCI_thread
----------------
Operation FCI_thread.DisplayLeftFD covers:    NONE
Operation FCI_thread.DisplayRightFD covers:    NONE
Operation FCI_thread.SyncFD covers:    NONE
Operation FCI_thread.EngageAP covers:    NONE
Other sections cover:    NONE


In Module: CSA
----------------
Operation CSA.APOn covers:    NONE
Operation CSA.RollActuator covers:
    EA-CSA-1 (operation spec. description (text))
```

```
        EA-CSA-2 (operation spec. description (text))
Operation CSA.PitchActuator covers:
        EA-CSA-3 (operation spec. description (text))
        EA-CSA-4 (operation spec. description (text))
Other sections cover:    NONE


In Module: CSA_thread
----------------
Operation CSA_thread.APOn covers:    NONE
Operation CSA_thread.RollActuator covers:
        EA-CSA-1 (operation spec. description (text))
        EA-CSA-2 (operation spec. description (text))
Operation CSA_thread.PitchActuator covers:
        EA-CSA-3 (operation spec. description (text))
        EA-CSA-4 (operation spec. description (text))
Other sections cover:    NONE


In Module: AHS
----------------
Operation AHS.AircraftRoll covers:
        EA-AHS-1 (operation spec. description (text))
        EA-AHS-2 (operation spec. description (text))
Operation AHS.AircraftPitch covers:
        EA-AHS-3 (operation spec. description (text))
        EA-AHS-4 (operation spec. description (text))
Other sections cover:    NONE


In Module: AHS_Thread
----------------
Operation AHS_Thread.AircraftRoll covers:    NONE
Operation AHS_Thread.AircraftPitch covers:    NONE
Other sections cover:    NONE


In Module: LeftPFD
----------------
Operation LeftPFD.RollGuidance covers:
        EA-PFD-1 (operation spec. description (text))
        EA-PFD-2 (operation spec. description (text))
Operation LeftPFD.PitchGuidance covers:
        EA-PFD-3 (operation spec. description (text))
        EA-PFD-4 (operation spec. description (text))
Operation LeftPFD.FDOn covers:    NONE
Operation LeftPFD.FCSFailed covers:    NONE
Operation LeftPFD.APStatus covers:    NONE
Other sections cover:    NONE


In Module: PFD_thread
----------------
Operation PFD_thread.RollGuidance covers:
        EA-PFD-1 (operation spec. description (text))
        EA-PFD-2 (operation spec. description (text))
Operation PFD_thread.PitchGuidance covers:
        EA-PFD-3 (operation spec. description (text))
        EA-PFD-4 (operation spec. description (text))
Operation PFD_thread.FDOn covers:    NONE
Operation PFD_thread.FCSFailed covers:    NONE
Operation PFD_thread.APStatus covers:    NONE
Other sections cover:    NONE


In Module: RightPFD
```

```
----------------
Operation RightPFD.RollGuidance covers:
    EA-PFD-1 (operation spec. description (text))
    EA-PFD-2 (operation spec. description (text))
Operation RightPFD.PitchGuidance covers:
    EA-PFD-3 (operation spec. description (text))
    EA-PFD-4 (operation spec. description (text))
Operation RightPFD.FDOn covers:    NONE
Operation RightPFD.FCSFailed covers:    NONE
Operation RightPFD.APStatus covers:    NONE
Other sections cover:    NONE
```

1.4. OpMatrix

```
REQUIREMENTS-OPERATIONS MATRIX
```

Requirement	Operation	Object
EA-AHS-1	AircraftRoll	AHS
EA-AHS-2	AircraftRoll	AHS
EA-AHS-3	AircraftPitch	AHS
EA-AHS-4	AircraftPitch	AHS
EA-CSA-1	RollActuator	CSA
EA-CSA-1	RollActuator	CSA_thread
EA-CSA-2	RollActuator	CSA
EA-CSA-2	RollActuator	CSA_thread
EA-CSA-3	PitchActuator	CSA
EA-CSA-3	PitchActuator	CSA_thread
EA-CSA-4	PitchActuator	CSA
EA-CSA-4	PitchActuator	CSA_thread
EA-PFD-1	RollGuidance	LeftPFD
EA-PFD-1	RollGuidance	PFD_thread
EA-PFD-1	RollGuidance	RightPFD
EA-PFD-2	RollGuidance	LeftPFD
EA-PFD-2	RollGuidance	PFD_thread
EA-PFD-2	RollGuidance	RightPFD
EA-PFD-3	PitchGuidance	LeftPFD
EA-PFD-3	PitchGuidance	PFD_thread
EA-PFD-3	PitchGuidance	RightPFD
EA-PFD-4	PitchGuidance	LeftPFD
EA-PFD-4	PitchGuidance	PFD_thread
EA-PFD-4	PitchGuidance	RightPFD
REQ-FCS-1	RollGuidance	FCS
REQ-FCS-1	PitchGuidance	FCS
REQ-FCS-2	SyncFD	FCS
REQ-FCS-2	EngageAP	FCS
REQ-FCS-3	FCSFailed	FCS
REQ-FCS-4	RollActuator	FCS
REQ-FCS-4	PitchActuator	FCS
REQ-FCS-5	APStatus	FCS
REQ-FG-1	RollGuidance	FG
REQ-FG-1	PitchGuidance	FG
REQ-FG-1	RollGuidance	FG_thread
REQ-FG-1	PitchGuidance	FG_thread
REQ-FG-2	SyncFD	FG
REQ-FG-2	SyncFD	FG_thread
REQ-FG-3	APRollGuidance	FG
REQ-FG-3	APPitchGuidance	FG
REQ-FG-3	APRollGuidance	FG_thread

```
| REQ-FG-3             | APPitchGuidance           | FG_thread        |
| REQ-FG-4             | FCSFailed                 | FG               |
| REQ-FG-4             | FCSFailed                 | FG_thread        |
| REQ-AP-1             | RollActuatorCommand       | AP               |
| REQ-AP-1             | PitchActuatorCommand      | AP               |
| REQ-AP-1             | RollActuatorCommand       | AP_thread        |
| REQ-AP-1             | PitchActuatorCommand      | AP_thread        |
| REQ-AP-2             | APStatus                  | AP               |
| REQ-AP-2             | APStatus                  | AP_thread        |
| REQ-AP-3             | APGuidanceRequest         | AP               |
| REQ-AP-3             | APGuidanceRequest         | AP_thread        |
 ----------------------------------------------------------------------------
```

OPERATIONS-REQUIREMENTS MATRIX

```
 ----------------------------------------------------------------------------
| Object               | Operation                 | Requirement      |
 ----------------------------------------------------------------------------
| FCS                  | LeftFDOn                  | NONE             |
| FCS                  | AircraftRoll              | NONE             |
| FCS                  | AircraftPitch             | NONE             |
| FCS                  | RollGuidance              | REQ-FCS-1        |
| FCS                  | PitchGuidance             | REQ-FCS-1        |
| FCS                  | FCSFailed                 | REQ-FCS-3        |
| FCS                  | APStatus                  | REQ-FCS-5        |
| FCS                  | RollActuator              | REQ-FCS-4        |
| FCS                  | PitchActuator             | REQ-FCS-4        |
| FCS                  | DisplayLeftFD             | NONE             |
| FCS                  | DisplayRightFD            | NONE             |
| FCS                  | SyncFD                    | REQ-FCS-2        |
| FCS                  | EngageAP                  | REQ-FCS-2        |
| FCS                  | RightFDOn                 | NONE             |
| FG                   | AircraftRoll              | NONE             |
| FG                   | AircraftPitch             | NONE             |
| FG                   | DisplayLeftFD             | NONE             |
| FG                   | DisplayRightFD            | NONE             |
| FG                   | SyncFD                    | REQ-FG-2         |
| FG                   | APGuidanceRequest         | NONE             |
| FG                   | APRollGuidance            | REQ-FG-3         |
| FG                   | APPitchGuidance           | REQ-FG-3         |
| FG                   | RollGuidance              | REQ-FG-1         |
| FG                   | PitchGuidance             | REQ-FG-1         |
| FG                   | LeftFDOn                  | NONE             |
| FG                   | RightFDOn                 | NONE             |
| FG                   | FCSFailed                 | REQ-FG-4         |
| FG_thread            | AircraftRoll              | NONE             |
| FG_thread            | AircraftPitch             | NONE             |
| FG_thread            | DisplayLeftFD             | NONE             |
| FG_thread            | DisplayRightFD            | NONE             |
| FG_thread            | SyncFD                    | REQ-FG-2         |
| FG_thread            | APGuidanceRequest         | NONE             |
| FG_thread            | APRollGuidance            | REQ-FG-3         |
| FG_thread            | APPitchGuidance           | REQ-FG-3         |
| FG_thread            | RollGuidance              | REQ-FG-1         |
| FG_thread            | PitchGuidance             | REQ-FG-1         |
| FG_thread            | LeftFDOn                  | NONE             |
| FG_thread            | RightFDOn                 | NONE             |
| FG_thread            | FCSFailed                 | REQ-FG-4         |
| AP                   | AircraftRoll              | NONE             |
| AP                   | AircraftPitch             | NONE             |
```

AP	APStatus	REQ-AP-2	
AP	RollActuatorCommand	REQ-AP-1	
AP	PitchActuatorCommand	REQ-AP-1	
AP	EngageAP	NONE	
AP	APGuidanceRequest	REQ-AP-3	
AP	APRollGuidance	NONE	
AP	APPitchGuidance	NONE	
AP_thread	AircraftRoll	NONE	
AP_thread	AircraftPitch	NONE	
AP_thread	APStatus	REQ-AP-2	
AP_thread	RollActuatorCommand	REQ-AP-1	
AP_thread	PitchActuatorCommand	REQ-AP-1	
AP_thread	EngageAP	NONE	
AP_thread	APGuidanceRequest	REQ-AP-3	
AP_thread	APRollGuidance	NONE	
AP_thread	APPitchGuidance	NONE	
FCI	DisplayLeftFD	NONE	
FCI	DisplayRightFD	NONE	
FCI	SyncFD	NONE	
FCI	EngageAP	NONE	
FCI_thread	DisplayLeftFD	NONE	
FCI_thread	DisplayRightFD	NONE	
FCI_thread	SyncFD	NONE	
FCI_thread	EngageAP	NONE	
CSA	APOn	NONE	
CSA	RollActuator	EA-CSA-1	
CSA	RollActuator	EA-CSA-2	
CSA	PitchActuator	EA-CSA-3	
CSA	PitchActuator	EA-CSA-4	
CSA_thread	APOn	NONE	
CSA_thread	RollActuator	EA-CSA-1	
CSA_thread	RollActuator	EA-CSA-2	
CSA_thread	PitchActuator	EA-CSA-3	
CSA_thread	PitchActuator	EA-CSA-4	
AHS	AircraftRoll	EA-AHS-1	
AHS	AircraftRoll	EA-AHS-2	
AHS	AircraftPitch	EA-AHS-3	
AHS	AircraftPitch	EA-AHS-4	
AHS_Thread	AircraftRoll	NONE	
AHS_Thread	AircraftPitch	NONE	
LeftPFD	RollGuidance	EA-PFD-1	
LeftPFD	RollGuidance	EA-PFD-2	
LeftPFD	PitchGuidance	EA-PFD-3	
LeftPFD	PitchGuidance	EA-PFD-4	
LeftPFD	FDOn	NONE	
LeftPFD	FCSFailed	NONE	
LeftPFD	APStatus	NONE	
PFD_thread	RollGuidance	EA-PFD-1	
PFD_thread	RollGuidance	EA-PFD-2	
PFD_thread	PitchGuidance	EA-PFD-3	
PFD_thread	PitchGuidance	EA-PFD-4	
PFD_thread	FDOn	NONE	
PFD_thread	FCSFailed	NONE	
PFD_thread	APStatus	NONE	
RightPFD	RollGuidance	EA-PFD-1	
RightPFD	RollGuidance	EA-PFD-2	
RightPFD	PitchGuidance	EA-PFD-3	
RightPFD	PitchGuidance	EA-PFD-4	
RightPFD	FDOn	NONE	
RightPFD	FCSFailed	NONE	

```
| RightPFD                 | APStatus                 | NONE                     |
------------------------------------------------------------------------------
```

1.5. Output

```
Module FlightControlSystem
Module FCS
    Description FCS
    Provided_Interface
        Operation LeftFDOn FCS
        Operation AircraftRoll FCS
        Operation AircraftPitch FCS
        Operation RollGuidance FCS
            Covers REQ-FCS-1 "operation spec. description (text)"
            Covers REQ-FG-1 "operation spec. description (text)"
            Covers REQ-FG-1 "operation spec. description (text)"
        Operation PitchGuidance FCS
            Covers REQ-FCS-1 "operation spec. description (text)"
            Covers REQ-FG-1 "operation spec. description (text)"
            Covers REQ-FG-1 "operation spec. description (text)"
        Operation FCSFailed FCS
            Covers REQ-FCS-3 "operation spec. description (text)"
            Covers REQ-FG-4 "operation spec. description (text)"
            Covers REQ-FG-4 "operation spec. description (text)"
        Operation APStatus FCS
            Covers REQ-FCS-5 "operation spec. description (text)"
            Covers REQ-AP-2 "operation spec. description (text)"
            Covers REQ-AP-2 "operation spec. description (text)"
        Operation RollActuator FCS
            Covers REQ-FCS-4 "operation spec. description (text)"
            Covers REQ-AP-1 "operation spec. description (text)"
            Covers REQ-AP-1 "operation spec. description (text)"
        Operation PitchActuator FCS
            Covers REQ-FCS-4 "operation spec. description (text)"
            Covers REQ-AP-1 "operation spec. description (text)"
            Covers REQ-AP-1 "operation spec. description (text)"
        Operation DisplayLeftFD FCS
        Operation DisplayRightFD FCS
        Operation SyncFD FCS
            Covers REQ-FCS-2 "operation spec. description (text)"
            Covers REQ-FG-2 "operation spec. description (text)"
            Covers REQ-FG-2 "operation spec. description (text)"
        Operation EngageAP FCS
            Covers REQ-FCS-2 "operation spec. description (text)"
        Operation RightFDOn FCS
Module FG
    Description FG
    Provided_Interface
        Operation AircraftRoll FG
        Operation AircraftPitch FG
        Operation DisplayLeftFD FG
        Operation DisplayRightFD FG
        Operation SyncFD FG
            Covers REQ-FG-2 "operation spec. description (text)"
            Covers REQ-FG-2 "operation spec. description (text)"
            Covers REQ-FCS-2 "operation spec. description (text)"
        Operation APGuidanceRequest FG
        Operation APRollGuidance FG
            Covers REQ-FG-3 "operation spec. description (text)"
            Covers REQ-FG-3 "operation spec. description (text)"
        Operation APPitchGuidance FG
```

```
                Covers REQ-FG-3 "operation spec. description (text)"
                Covers REQ-FG-3 "operation spec. description (text)"
            Operation RollGuidance FG
                Covers REQ-FG-1 "operation spec. description (text)"
                Covers REQ-FG-1 "operation spec. description (text)"
                Covers REQ-FCS-1 "operation spec. description (text)"
            Operation PitchGuidance FG
                Covers REQ-FG-1 "operation spec. description (text)"
                Covers REQ-FG-1 "operation spec. description (text)"
                Covers REQ-FCS-1 "operation spec. description (text)"
            Operation LeftFDOn FG
            Operation RightFDOn FG
            Operation FCSFailed FG
                Covers REQ-FG-4 "operation spec. description (text)"
                Covers REQ-FG-4 "operation spec. description (text)"
                Covers REQ-FCS-3 "operation spec. description (text)"
Module FG_thread
    Provided_Interface
        Operation AircraftRoll FG_thread
        Operation AircraftPitch FG_thread
        Operation DisplayLeftFD FG_thread
        Operation DisplayRightFD FG_thread
        Operation SyncFD FG_thread
            Covers REQ-FG-2 "operation spec. description (text)"
            Covers REQ-FG-2 "operation spec. description (text)"
            Covers REQ-FCS-2 "operation spec. description (text)"
        Operation APGuidanceRequest FG_thread
        Operation APRollGuidance FG_thread
            Covers REQ-FG-3 "operation spec. description (text)"
            Covers REQ-FG-3 "operation spec. description (text)"
        Operation APPitchGuidance FG_thread
            Covers REQ-FG-3 "operation spec. description (text)"
            Covers REQ-FG-3 "operation spec. description (text)"
        Operation RollGuidance FG_thread
            Covers REQ-FG-1 "operation spec. description (text)"
            Covers REQ-FG-1 "operation spec. description (text)"
            Covers REQ-FCS-1 "operation spec. description (text)"
        Operation PitchGuidance FG_thread
            Covers REQ-FG-1 "operation spec. description (text)"
            Covers REQ-FG-1 "operation spec. description (text)"
            Covers REQ-FCS-1 "operation spec. description (text)"
        Operation LeftFDOn FG_thread
        Operation RightFDOn FG_thread
        Operation FCSFailed FG_thread
            Covers REQ-FG-4 "operation spec. description (text)"
            Covers REQ-FG-4 "operation spec. description (text)"
            Covers REQ-FCS-3 "operation spec. description (text)"
Module AP
    Description AP
    Provided_Interface
        Operation AircraftRoll AP
        Operation AircraftPitch AP
        Operation APStatus AP
            Covers REQ-AP-2 "operation spec. description (text)"
            Covers REQ-AP-2 "operation spec. description (text)"
            Covers REQ-FCS-5 "operation spec. description (text)"
        Operation RollActuatorCommand AP
            Covers REQ-AP-1 "operation spec. description (text)"
            Covers REQ-AP-1 "operation spec. description (text)"
            Covers REQ-FCS-4 "operation spec. description (text)"
```

```
        Operation PitchActuatorCommand AP
            Covers REQ-AP-1 "operation spec. description (text)"
            Covers REQ-AP-1 "operation spec. description (text)"
            Covers REQ-FCS-4 "operation spec. description (text)"
        Operation EngageAP AP
            Covers REQ-FCS-2 "operation spec. description (text)"
        Operation APGuidanceRequest AP
            Covers REQ-AP-3 "operation spec. description (text)"
            Covers REQ-AP-3 "operation spec. description (text)"
        Operation APRollGuidance AP
        Operation APPitchGuidance AP
Module AP_thread
    Provided_Interface
        Operation AircraftRoll AP_thread
        Operation AircraftPitch AP_thread
        Operation APStatus AP_thread
            Covers REQ-AP-2 "operation spec. description (text)"
            Covers REQ-AP-2 "operation spec. description (text)"
            Covers REQ-FCS-5 "operation spec. description (text)"
        Operation RollActuatorCommand AP_thread
            Covers REQ-AP-1 "operation spec. description (text)"
            Covers REQ-AP-1 "operation spec. description (text)"
            Covers REQ-FCS-4 "operation spec. description (text)"
        Operation PitchActuatorCommand AP_thread
            Covers REQ-AP-1 "operation spec. description (text)"
            Covers REQ-AP-1 "operation spec. description (text)"
            Covers REQ-FCS-4 "operation spec. description (text)"
        Operation EngageAP AP_thread
            Covers REQ-FCS-2 "operation spec. description (text)"
        Operation APGuidanceRequest AP_thread
            Covers REQ-AP-3 "operation spec. description (text)"
            Covers REQ-AP-3 "operation spec. description (text)"
        Operation APRollGuidance AP_thread
        Operation APPitchGuidance AP_thread
Module FCI
    Description FCI
    Provided_Interface
        Operation DisplayLeftFD FCI
        Operation DisplayRightFD FCI
        Operation SyncFD FCI
        Operation EngageAP FCI
Module FCI_thread
    Provided_Interface
        Operation DisplayLeftFD FCI_thread
        Operation DisplayRightFD FCI_thread
        Operation SyncFD FCI_thread
        Operation EngageAP FCI_thread
Module CSA
    Description CSA
    Provided_Interface
        Operation APOn CSA
        Operation RollActuator CSA
            Covers EA-CSA-1 "operation spec. description (text)"
            Covers EA-CSA-2 "operation spec. description (text)"
            Covers EA-CSA-1 "operation spec. description (text)"
            Covers EA-CSA-2 "operation spec. description (text)"
        Operation PitchActuator CSA
            Covers EA-CSA-3 "operation spec. description (text)"
            Covers EA-CSA-4 "operation spec. description (text)"
            Covers EA-CSA-3 "operation spec. description (text)"
```

```
                Covers EA-CSA-4 "operation spec. description (text)"
Module CSA_thread
    Provided_Interface
        Operation APOn CSA_thread
        Operation RollActuator CSA_thread
            Covers EA-CSA-1 "operation spec. description (text)"
            Covers EA-CSA-2 "operation spec. description (text)"
            Covers EA-CSA-1 "operation spec. description (text)"
            Covers EA-CSA-2 "operation spec. description (text)"
        Operation PitchActuator CSA_thread
            Covers EA-CSA-3 "operation spec. description (text)"
            Covers EA-CSA-4 "operation spec. description (text)"
            Covers EA-CSA-3 "operation spec. description (text)"
            Covers EA-CSA-4 "operation spec. description (text)"
Module AHS
    Description AHS
    Provided_Interface
        Operation AircraftRoll AHS
            Covers EA-AHS-1 "operation spec. description (text)"
            Covers EA-AHS-2 "operation spec. description (text)"
        Operation AircraftPitch AHS
            Covers EA-AHS-3 "operation spec. description (text)"
            Covers EA-AHS-4 "operation spec. description (text)"
Module AHS_Thread
    Provided_Interface
        Operation AircraftRoll AHS_Thread
            Covers EA-AHS-1 "operation spec. description (text)"
            Covers EA-AHS-2 "operation spec. description (text)"
        Operation AircraftPitch AHS_Thread
            Covers EA-AHS-3 "operation spec. description (text)"
            Covers EA-AHS-4 "operation spec. description (text)"
Module LeftPFD
    Description LeftPFD
    Provided_Interface
        Operation RollGuidance LeftPFD
            Covers EA-PFD-1 "operation spec. description (text)"
            Covers EA-PFD-2 "operation spec. description (text)"
            Covers EA-PFD-1 "operation spec. description (text)"
            Covers EA-PFD-2 "operation spec. description (text)"
        Operation PitchGuidance LeftPFD
            Covers EA-PFD-3 "operation spec. description (text)"
            Covers EA-PFD-4 "operation spec. description (text)"
            Covers EA-PFD-3 "operation spec. description (text)"
            Covers EA-PFD-4 "operation spec. description (text)"
        Operation FDOn LeftPFD
        Operation FCSFailed LeftPFD
        Operation APStatus LeftPFD
Module PFD_thread
    Provided_Interface
        Operation RollGuidance PFD_thread
            Covers EA-PFD-1 "operation spec. description (text)"
            Covers EA-PFD-2 "operation spec. description (text)"
            Covers EA-PFD-1 "operation spec. description (text)"
            Covers EA-PFD-2 "operation spec. description (text)"
        Operation PitchGuidance PFD_thread
            Covers EA-PFD-3 "operation spec. description (text)"
            Covers EA-PFD-4 "operation spec. description (text)"
            Covers EA-PFD-3 "operation spec. description (text)"
            Covers EA-PFD-4 "operation spec. description (text)"
        Operation FDOn PFD_thread
```

```
            Operation FCSFailed PFD_thread
            Operation APStatus PFD_thread
Module RightPFD
    Description RightPFD
    Provided_Interface
        Operation RollGuidance RightPFD
            Covers EA-PFD-1 "operation spec. description (text)"
            Covers EA-PFD-2 "operation spec. description (text)"
        Operation PitchGuidance RightPFD
            Covers EA-PFD-3 "operation spec. description (text)"
            Covers EA-PFD-4 "operation spec. description (text)"
        Operation FDOn RightPFD
        Operation FCSFailed RightPFD
        Operation APStatus RightPFD
```

1.6. REMatrix

```
REQUIREMENTS-ENTITIES MATRIX


EA-AHS-1    is covered by:
    Operation AHS.AircraftRoll (operation spec. description (text))
EA-AHS-2    is covered by:
    Operation AHS.AircraftRoll (operation spec. description (text))
EA-AHS-3    is covered by:
    Operation AHS.AircraftPitch (operation spec. description (text))
EA-AHS-4    is covered by:
    Operation AHS.AircraftPitch (operation spec. description (text))
EA-CSA-1    is covered by:
    Operation CSA.RollActuator (operation spec. description (text))
    Operation CSA_thread.RollActuator (operation spec. description (text))
EA-CSA-2    is covered by:
    Operation CSA.RollActuator (operation spec. description (text))
    Operation CSA_thread.RollActuator (operation spec. description (text))
EA-CSA-3    is covered by:
    Operation CSA.PitchActuator (operation spec. description (text))
    Operation CSA_thread.PitchActuator (operation spec. description (text))
EA-CSA-4    is covered by:
    Operation CSA.PitchActuator (operation spec. description (text))
    Operation CSA_thread.PitchActuator (operation spec. description (text))
EA-PFD-1    is covered by:
    Operation LeftPFD.RollGuidance (operation spec. description (text))
    Operation PFD_thread.RollGuidance (operation spec. description (text))
    Operation RightPFD.RollGuidance (operation spec. description (text))
EA-PFD-2    is covered by:
    Operation LeftPFD.RollGuidance (operation spec. description (text))
    Operation PFD_thread.RollGuidance (operation spec. description (text))
    Operation RightPFD.RollGuidance (operation spec. description (text))
EA-PFD-3    is covered by:
    Operation LeftPFD.PitchGuidance (operation spec. description (text))
    Operation PFD_thread.PitchGuidance (operation spec. description (text))
    Operation RightPFD.PitchGuidance (operation spec. description (text))
EA-PFD-4    is covered by:
    Operation LeftPFD.PitchGuidance (operation spec. description (text))
    Operation PFD_thread.PitchGuidance (operation spec. description (text))
    Operation RightPFD.PitchGuidance (operation spec. description (text))
REQ-FCS-1    is covered by:
    Operation FCS.RollGuidance (operation spec. description (text))
    Operation FCS.PitchGuidance (operation spec. description (text))
REQ-FCS-2    is covered by:
    Operation FCS.SyncFD (operation spec. description (text))
```

```
    Operation FCS.EngageAP (operation spec. description (text))
REQ-FCS-3    is covered by:
    Operation FCS.FCSFailed (operation spec. description (text))
REQ-FCS-4    is covered by:
    Operation FCS.RollActuator (operation spec. description (text))
    Operation FCS.PitchActuator (operation spec. description (text))
REQ-FCS-5    is covered by:
    Operation FCS.APStatus (operation spec. description (text))
REQ-FG-1    is covered by:
    Operation FG.RollGuidance (operation spec. description (text))
    Operation FG.PitchGuidance (operation spec. description (text))
    Operation FG_thread.RollGuidance (operation spec. description (text))
    Operation FG_thread.PitchGuidance (operation spec. description (text))
REQ-FG-2    is covered by:
    Operation FG.SyncFD (operation spec. description (text))
    Operation FG_thread.SyncFD (operation spec. description (text))
REQ-FG-3    is covered by:
    Operation FG.APRollGuidance (operation spec. description (text))
    Operation FG.APPitchGuidance (operation spec. description (text))
    Operation FG_thread.APRollGuidance (operation spec. description (text))
    Operation FG_thread.APPitchGuidance (operation spec. description (text))
REQ-FG-4    is covered by:
    Operation FG.FCSFailed (operation spec. description (text))
    Operation FG_thread.FCSFailed (operation spec. description (text))
REQ-AP-1    is covered by:
    Operation AP.RollActuatorCommand (operation spec. description (text))
    Operation AP.PitchActuatorCommand (operation spec. description (text))
    Operation AP_thread.RollActuatorCommand (operation spec. description (text))
    Operation AP_thread.PitchActuatorCommand (operation spec. description (text))
REQ-AP-2    is covered by:
    Operation AP.APStatus (operation spec. description (text))
    Operation AP_thread.APStatus (operation spec. description (text))
REQ-AP-3    is covered by:
    Operation AP.APGuidanceRequest (operation spec. description (text))
    Operation AP_thread.APGuidanceRequest (operation spec. description (text))
```

1.7. TabMatrix

```
REQUIREMENTS-ENTITIES MATRIX


-----------------------------------------------------------------------------
| Requirement           | Operation            | Object                     |
-----------------------------------------------------------------------------
| EA-AHS-1              | AircraftRoll         | AHS                        |
| EA-AHS-2              | AircraftRoll         | AHS                        |
| EA-AHS-3              | AircraftPitch        | AHS                        |
| EA-AHS-4              | AircraftPitch        | AHS                        |
| EA-CSA-1              | RollActuator         | CSA                        |
| EA-CSA-1              | RollActuator         | CSA_thread                 |
| EA-CSA-2              | RollActuator         | CSA                        |
| EA-CSA-2              | RollActuator         | CSA_thread                 |
| EA-CSA-3              | PitchActuator        | CSA                        |
| EA-CSA-3              | PitchActuator        | CSA_thread                 |
| EA-CSA-4              | PitchActuator        | CSA                        |
| EA-CSA-4              | PitchActuator        | CSA_thread                 |
| EA-PFD-1              | RollGuidance         | LeftPFD                    |
| EA-PFD-1              | RollGuidance         | PFD_thread                 |
| EA-PFD-1              | RollGuidance         | RightPFD                   |
| EA-PFD-2              | RollGuidance         | LeftPFD                    |
| EA-PFD-2              | RollGuidance         | PFD_thread                 |
```

```
| EA-PFD-2            | RollGuidance           | RightPFD        |
| EA-PFD-3            | PitchGuidance          | LeftPFD         |
| EA-PFD-3            | PitchGuidance          | PFD_thread      |
| EA-PFD-3            | PitchGuidance          | RightPFD        |
| EA-PFD-4            | PitchGuidance          | LeftPFD         |
| EA-PFD-4            | PitchGuidance          | PFD_thread      |
| EA-PFD-4            | PitchGuidance          | RightPFD        |
| REQ-FCS-1           | RollGuidance           | FCS             |
| REQ-FCS-1           | PitchGuidance          | FCS             |
| REQ-FCS-2           | SyncFD                 | FCS             |
| REQ-FCS-2           | EngageAP               | FCS             |
| REQ-FCS-3           | FCSFailed              | FCS             |
| REQ-FCS-4           | RollActuator           | FCS             |
| REQ-FCS-4           | PitchActuator          | FCS             |
| REQ-FCS-5           | APStatus               | FCS             |
| REQ-FG-1            | RollGuidance           | FG              |
| REQ-FG-1            | PitchGuidance          | FG              |
| REQ-FG-1            | RollGuidance           | FG_thread       |
| REQ-FG-1            | PitchGuidance          | FG_thread       |
| REQ-FG-2            | SyncFD                 | FG              |
| REQ-FG-2            | SyncFD                 | FG_thread       |
| REQ-FG-3            | APRollGuidance         | FG              |
| REQ-FG-3            | APPitchGuidance        | FG              |
| REQ-FG-3            | APRollGuidance         | FG_thread       |
| REQ-FG-3            | APPitchGuidance        | FG_thread       |
| REQ-FG-4            | FCSFailed              | FG              |
| REQ-FG-4            | FCSFailed              | FG_thread       |
| REQ-AP-1            | RollActuatorCommand    | AP              |
| REQ-AP-1            | PitchActuatorCommand   | AP              |
| REQ-AP-1            | RollActuatorCommand    | AP_thread       |
| REQ-AP-1            | PitchActuatorCommand   | AP_thread       |
| REQ-AP-2            | APStatus               | AP              |
| REQ-AP-2            | APStatus               | AP_thread       |
| REQ-AP-3            | APGuidanceRequest      | AP              |
| REQ-AP-3            | APGuidanceRequest      | AP_thread       |
```

ENTITIES-REQUIREMENTS MATRIX

Object	Operation	Requirement
FCS	LeftFDOn	NONE
FCS	AircraftRoll	NONE
FCS	AircraftPitch	NONE
FCS	RollGuidance	REQ-FCS-1
FCS	PitchGuidance	REQ-FCS-1
FCS	FCSFailed	REQ-FCS-3
FCS	APStatus	REQ-FCS-5
FCS	RollActuator	REQ-FCS-4
FCS	PitchActuator	REQ-FCS-4
FCS	DisplayLeftFD	NONE
FCS	DisplayRightFD	NONE
FCS	SyncFD	REQ-FCS-2
FCS	EngageAP	REQ-FCS-2
FCS	RightFDOn	NONE
FG	AircraftRoll	NONE
FG	AircraftPitch	NONE
FG	DisplayLeftFD	NONE
FG	DisplayRightFD	NONE

FG	SyncFD	REQ-FG-2
FG	APGuidanceRequest	NONE
FG	APRollGuidance	REQ-FG-3
FG	APPitchGuidance	REQ-FG-3
FG	RollGuidance	REQ-FG-1
FG	PitchGuidance	REQ-FG-1
FG	LeftFDOn	NONE
FG	RightFDOn	NONE
FG	FCSFailed	REQ-FG-4
FG_thread	AircraftRoll	NONE
FG_thread	AircraftPitch	NONE
FG_thread	DisplayLeftFD	NONE
FG_thread	DisplayRightFD	NONE
FG_thread	SyncFD	REQ-FG-2
FG_thread	APGuidanceRequest	NONE
FG_thread	APRollGuidance	REQ-FG-3
FG_thread	APPitchGuidance	REQ-FG-3
FG_thread	RollGuidance	REQ-FG-1
FG_thread	PitchGuidance	REQ-FG-1
FG_thread	LeftFDOn	NONE
FG_thread	RightFDOn	NONE
FG_thread	FCSFailed	REQ-FG-4
AP	AircraftRoll	NONE
AP	AircraftPitch	NONE
AP	APStatus	REQ-AP-2
AP	RollActuatorCommand	REQ-AP-1
AP	PitchActuatorCommand	REQ-AP-1
AP	EngageAP	NONE
AP	APGuidanceRequest	REQ-AP-3
AP	APRollGuidance	NONE
AP	APPitchGuidance	NONE
AP_thread	AircraftRoll	NONE
AP_thread	AircraftPitch	NONE
AP_thread	APStatus	REQ-AP-2
AP_thread	RollActuatorCommand	REQ-AP-1
AP_thread	PitchActuatorCommand	REQ-AP-1
AP_thread	EngageAP	NONE
AP_thread	APGuidanceRequest	REQ-AP-3
AP_thread	APRollGuidance	NONE
AP_thread	APPitchGuidance	NONE
FCI	DisplayLeftFD	NONE
FCI	DisplayRightFD	NONE
FCI	SyncFD	NONE
FCI	EngageAP	NONE
FCI_thread	DisplayLeftFD	NONE
FCI_thread	DisplayRightFD	NONE
FCI_thread	SyncFD	NONE
FCI_thread	EngageAP	NONE
CSA	APOn	NONE
CSA	RollActuator	EA-CSA-1
CSA	RollActuator	EA-CSA-2
CSA	PitchActuator	EA-CSA-3
CSA	PitchActuator	EA-CSA-4
CSA_thread	APOn	NONE
CSA_thread	RollActuator	EA-CSA-1
CSA_thread	RollActuator	EA-CSA-2
CSA_thread	PitchActuator	EA-CSA-3
CSA_thread	PitchActuator	EA-CSA-4
AHS	AircraftRoll	EA-AHS-1
AHS	AircraftRoll	EA-AHS-2

```
| AHS               | AircraftPitch         | EA-AHS-3              |
| AHS               | AircraftPitch         | EA-AHS-4              |
| AHS_Thread        | AircraftRoll          | NONE                  |
| AHS_Thread        | AircraftPitch         | NONE                  |
| LeftPFD           | RollGuidance          | EA-PFD-1              |
| LeftPFD           | RollGuidance          | EA-PFD-2              |
| LeftPFD           | PitchGuidance         | EA-PFD-3              |
| LeftPFD           | PitchGuidance         | EA-PFD-4              |
| LeftPFD           | FDOn                  | NONE                  |
| LeftPFD           | FCSFailed             | NONE                  |
| LeftPFD           | APStatus              | NONE                  |
| PFD_thread        | RollGuidance          | EA-PFD-1              |
| PFD_thread        | RollGuidance          | EA-PFD-2              |
| PFD_thread        | PitchGuidance         | EA-PFD-3              |
| PFD_thread        | PitchGuidance         | EA-PFD-4              |
| PFD_thread        | FDOn                  | NONE                  |
| PFD_thread        | FCSFailed             | NONE                  |
| PFD_thread        | APStatus              | NONE                  |
| RightPFD          | RollGuidance          | EA-PFD-1              |
| RightPFD          | RollGuidance          | EA-PFD-2              |
| RightPFD          | PitchGuidance         | EA-PFD-3              |
| RightPFD          | PitchGuidance         | EA-PFD-4              |
| RightPFD          | FDOn                  | NONE                  |
| RightPFD          | FCSFailed             | NONE                  |
| RightPFD          | APStatus              | NONE                  |
 -------------------------------------------------------------------------
```