Behavioral Scoped Review Method

DATE: 28/10/2022

Summary

This document aims to explicit and to explain the method called "behavioral Scoped Review" (BSR). This method is introduced by the LIV-S085L02-007-V6, ISX-S2C-LIV-1037-V6 document of S2C project. It is based on the concept of reviewing the behaviors delimited locally on two distinct models then status on their consistency. The method is illustrated by proofs-of-concept (PoC) based upon SE and SA models to experiment, determine and validate the method in the PoC's domain of usage.

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Title	Reference

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Title	Reference

2 Objectives, constraints and context

2.1 Objectives

- **#id-a**

- **#id-b**

- **#id-c**

2.2 Constraints

2.2.1 Common constraints

#id-d **#id-e**, **#id-f** **#id-g** **#id-j** **#id-k** **#id-l** **#id-m** **#id-n** **#id-o**

#id-e

#id-g

2.2.2 Specific constraints

	#sq-1
	#sq-0
	#sq-6

#sq-0

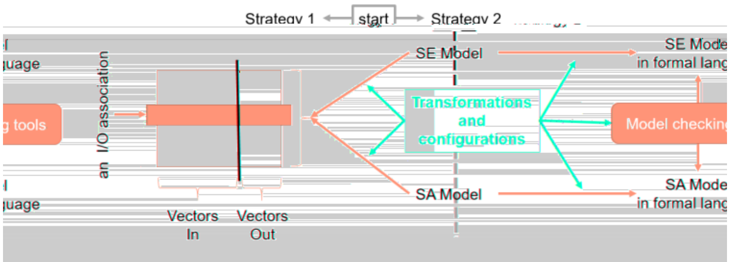
#sq-1

#sq-6

2.3 Context

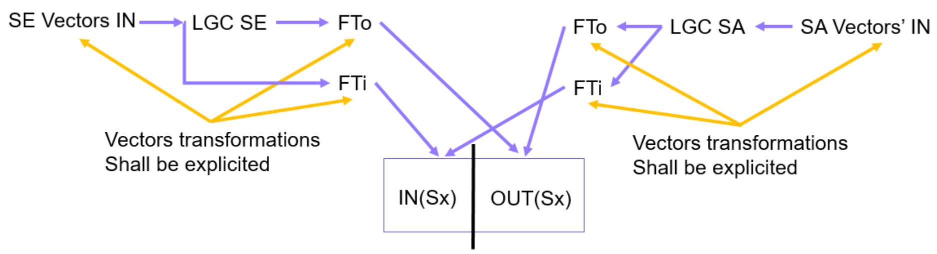
2.3.1 Common context

2.3.2 Specific context

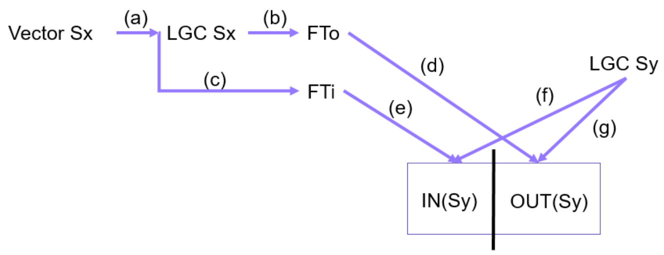


	#id-n	

#id-j



#id-b



#id-f #id-m

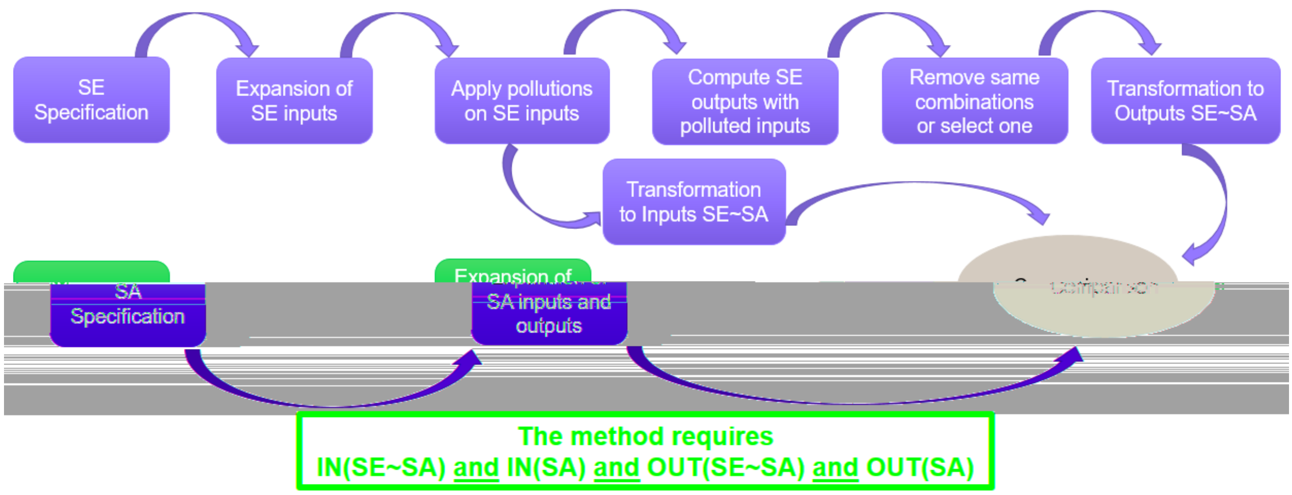
Consistency Links

#id-f

3 Developed method

3.1 Process

#id-g



3.1.1 Specification SA

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3.1.3 Specification SE

3.1.4 Expansion of SE inputs (TAIO SE)

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#id-e **#id-j**

3.1.6 Transformation to Inputs SE~SA

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→ →
→ →
→ →

3.1.7 Compute SE output with polluted inputs

3.1.8 Transformation to Outputs SE~SA

3.1.9 Remove same combinations or select one

3.1.10 Comparison

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3.2 Intra-process validation activities

3.3 Iterations

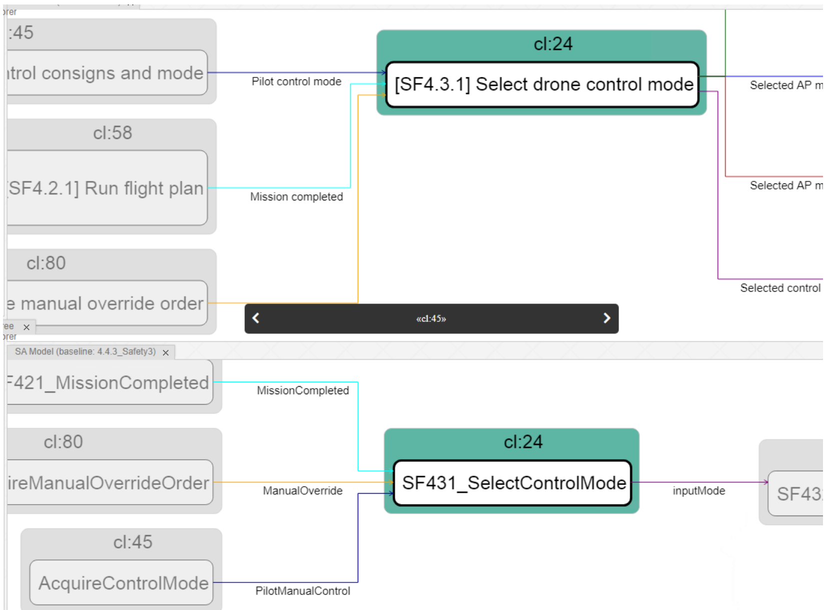
4 Deductible facts before PoCs are done

5 PoCs

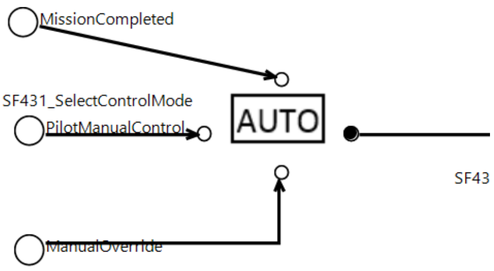
#sq-1

#sq-0 #sq-6

5.1 PoC1



5.1.1 SA Model and specification



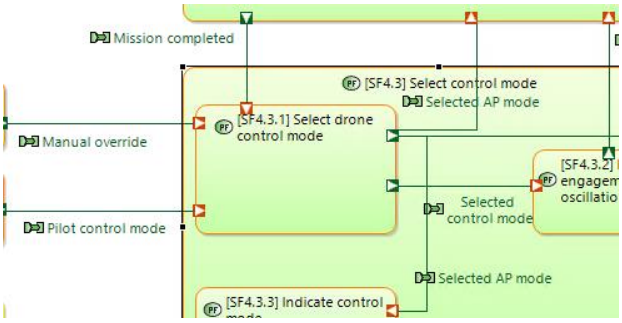
Assertion:

```
case {
(status = OK) and ((ManualOverride =PRESENT) or (MissionCompleted = PRESENT)) : MANUAL,
(status = OK) and (inputMode = AUTO) : AUTO,
(status = OK) and (inputMode = MANUAL) : MANUAL,
(status = OK) and (inputMode = ERRONEOUS) : ERRONEOUS,
(status = OK) and (inputMode = LOST) : MANUAL,
status = STUCK_AUTO : AUTO,
status = STUCK_MAN : MANUAL,
status = UNDEF : ERRONEOUS,
else LOST
}
```

5.1.2 Expansion of SA Inputs and Outputs (TAIO SA)

Pilot Manual Control	Manual Override	Mission Completed	OutputMode
AUTO	PRESENT	PRESENT	MANUAL
AUTO	PRESENT	ABSENT	MANUAL
AUTO	ABSENT	PRESENT	MANUAL
AUTO	ABSENT	ABSENT	AUTO
MANUAL	PRESENT	PRESENT	MANUAL
MANUAL	PRESENT	ABSENT	MANUAL
MANUAL	ABSENT	PRESENT	MANUAL
MANUAL	ABSENT	ABSENT	MANUAL
ERRONEOUS	PRESENT	PRESENT	MANUAL
ERRONEOUS	PRESENT	ABSENT	MANUAL
ERRONEOUS	ABSENT	PRESENT	MANUAL
ERRONEOUS	ABSENT	ABSENT	ERRONEOUS
LOST	PRESENT	PRESENT	MANUAL
LOST	PRESENT	ABSENT	MANUAL
LOST	ABSENT	PRESENT	MANUAL
LOST	ABSENT	ABSENT	MANUAL

5.1.3 SE Model and specification



Pilot control mode		Manual override		Mission completed	Selected AP mode	Selected control mode
Value	Validity status	Value	Validity status	Value	Value	Value
N/A	N/A	OVERRIDE	VALID	N/A	Speed consign mode	MANUAL
N/A	N/A	N/A	INVALID	N/A	Speed consign mode	MANUAL
N/A	N/A	N/A	N/A	Completed	Speed consign mode	MANUAL
N/A	INVALID	N/A	N/A	N/A	Speed consign mode	MANUAL
MANUAL	VALID	N/A	N/A	N/A	Speed consign mode	MANUAL
Speed consign mode	VALID	NO OVERRIDE	VALID	N/A	Speed consign mode	AUTO
Flight plan mode	VALID	NO OVERRIDE	VALID	Not completed	Flight plan mode	AUTO

5.1.4 Expansion of SE Inputs (TAIO SE)

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A	C	E	G	I	L
Pilot control mode		Manual override		Mission completed	
Non-polluted Value 1CMD=MANUAL 2CMD=SCM 3CMD=FPM	Validity status	Non-polluted Value	Validity status	Non-polluted Value	Implicit Validity
1CMD	Valid	Override	Valid	C	Valid
1CMD	Valid	Override	Valid	NC	Valid
1CMD	Valid	Override	Invalid	C	Valid
1CMD	Valid	Override	Invalid	NC	Valid
1CMD	Valid	No Override	Valid	C	Valid
1CMD	Valid	No Override	Valid	NC	Valid
1CMD	Valid	No Override	Invalid	C	Valid
1CMD	Valid	No Override	Invalid	NC	Valid
1CMD	Invalid	Override	Valid	C	Valid
1CMD	Invalid	Override	Valid	NC	Valid
1CMD	Invalid	Override	Invalid	C	Valid
1CMD	Invalid	Override	Invalid	NC	Valid
1CMD	Invalid	No Override	Valid	C	Valid
1CMD	Invalid	No Override	Valid	NC	Valid
1CMD	Invalid	No Override	Invalid	C	Valid
1CMD	Invalid	No Override	Invalid	NC	Valid
2CMD	Valid	Override	Valid	C	Valid
2CMD	Valid	Override	Valid	NC	Valid
2CMD	Valid	Override	Invalid	C	Valid
2CMD	Valid	Override	Invalid	NC	Valid
2CMD	Valid	No Override	Valid	C	Valid
2CMD	Valid	No Override	Valid	NC	Valid
2CMD	Valid	No Override	Invalid	C	Valid
2CMD	Valid	No Override	Invalid	NC	Valid
2CMD	Invalid	Override	Valid	C	Valid
2CMD	Invalid	Override	Valid	NC	Valid
2CMD	Invalid	Override	Invalid	C	Valid
2CMD	Invalid	Override	Invalid	NC	Valid
2CMD	Invalid	No Override	Valid	C	Valid
2CMD	Invalid	No Override	Valid	NC	Valid
2CMD	Invalid	No Override	Invalid	C	Valid
2CMD	Invalid	No Override	Invalid	NC	Valid
3CMD	Valid	Override	Valid	C	Valid

5.1.5 Apply pollution on SE Inputs.

Pilot control mode			Manual override			Mission completed		
Non-polluted Value 1CMD=MANUAL 2CMD=SCM 3CMD=FPM	Polluted Value	Validity status	Non-polluted Value	Polluted Value	Validity status	Non-polluted Value	Polluted Value	Implicit Validity
1CMD		Valid	Override		Valid	C		Valid
1CMD		Valid	Override		Valid	NC		Valid
1CMD		Valid	Override		Invalid	C		Valid
1CMD		Valid	Override		Invalid	NC		Valid
1CMD		Valid	No Override		Valid	C		Val
1CMD		Valid	No Override		Valid	NC		Val
1CMD		Valid	No Override		Invalid	C		Val
1CMD		Valid	No Override		Invalid	NC		Val
1CMD		Invalid	Override		Valid	C		Val
1CMD		Invalid	Override		Valid	NC		Val
1CMD		Invalid	Override		Invalid	C		Val
1CMD		Invalid	Override		Invalid	NC		Val
1CMD		Invalid	No Override		Valid	C		Val
1CMD		Invalid	No Override		Valid	NC		Val
1CMD		Invalid	No Override		Invalid	C		Val
1CMD		Invalid	No Override		Invalid	NC		Val
2CMD		Valid	Override		Valid	C		Val
2CMD		Valid	Override		Valid	NC		Val
2CMD		Valid	Override		Invalid	C		Val
2CMD		Valid	Override		Invalid	NC		Val
2CMD		Valid	No Override		Valid	C		Val
2CMD		Valid	No Override		Valid	NC		Val
2CMD		Valid	No Override		Invalid	C		Val
2CMD		Valid	No Override		Invalid	NC		Val
2CMD		Invalid	Override		Valid	C		Val
2CMD		Invalid	Override		Valid	NC		Val
2CMD		Invalid	Override		Invalid	C		Val
2CMD		Invalid	Override		Invalid	NC		Val
2CMD		Invalid	No Override		Valid	C		Val
2CMD		Invalid	No Override		Valid	NC		Val
2CMD		Invalid	No Override		Invalid	C		Val
2CMD		Invalid	No Override		Invalid	NC		Val
3CMD		Valid	Override		Valid	C		Val
3CMD		Valid	Override		Valid	NC		Val
3CMD		Valid	Override		Invalid	C		Val
3CMD		Valid	Override		Invalid	NC		Val

Pilot control mode			Manual override			Mission completed		
Non-polluted Value 1CMD=MANUAL 2CMD=SCM 3CMD=FPM	Polluted Value	Validity status	Non-polluted Value	Polluted Value	Validity status	Non-polluted Value	Polluted Value	Implicit Validity
1CMD		Valid	Override		Valid	C		Valid
1CMD		Valid	Override		Valid	NC		Valid
1CMD		Valid	Override		Invalid	C		Valid
1CMD		Valid	Override		Invalid	NC		Valid

	A	B	C	E	F	G	I	J	L
1	Pilot control mode			Manual override			Mission completed		
2	Non-polluted Value 1CMD=MANUAL 2CMD=SCM 3CMD=FPM	Polluted Value	Validity status	Non-polluted Value	Polluted Value	Validity status	Non-polluted Value	Polluted Value	Implicit Validity
3	1CMD	1CMD	Valid	Override	Override	Valid	C	C	Valid
4	1CMD	2CMD	Valid	Override	Override	Valid	C	C	Valid
5	1CMD	3CMD	Valid	Override	Override	Valid	C	C	Valid
6	1CMD	1CMD	Valid	Override	No Override	Valid	C	C	Valid
7	1CMD	2CMD	Valid	Override	No Override	Valid	C	C	Valid
8	1CMD	3CMD	Valid	Override	No Override	Valid	C	C	Valid
9	1CMD	1CMD	Valid	Override	Override	Valid	C	NC	Valid
10	1CMD	2CMD	Valid	Override	Override	Valid	C	NC	Valid
11	1CMD	3CMD	Valid	Override	Override	Valid	C	NC	Valid
12	1CMD	1CMD	Valid	Override	No Override	Valid	C	NC	Valid
13	1CMD	2CMD	Valid	Override	No Override	Valid	C	NC	Valid
14	1CMD	3CMD	Valid	Override	No Override	Valid	C	NC	Valid
15	1CMD	1CMD	Valid	Override	Override	Valid	NC	NC	Valid
16	1CMD	2CMD	Valid	Override	Override	Valid	NC	NC	Valid
17	1CMD	3CMD	Valid	Override	Override	Valid	NC	NC	Valid
18	1CMD	1CMD	Valid	Override	No Override	Valid	NC	NC	Valid
19	1CMD	2CMD	Valid	Override	No Override	Valid	NC	NC	Valid
20	1CMD	3CMD	Valid	Override	No Override	Valid	NC	NC	Valid
21	1CMD	1CMD	Valid	Override	Override	Valid	NC	C	Valid
22	1CMD	2CMD	Valid	Override	Override	Valid	NC	C	Valid
23	1CMD	3CMD	Valid	Override	Override	Valid	NC	C	Valid
24	1CMD	1CMD	Valid	Override	No Override	Valid	NC	C	Valid
25	1CMD	2CMD	Valid	Override	No Override	Valid	NC	C	Valid
26	1CMD	3CMD	Valid	Override	No Override	Valid	NC	C	Valid
27	1CMD	1CMD	Valid	Override	Override	Invalid	C	C	Valid
28	1CMD	2CMD	Valid	Override	Override	Invalid	C	C	Valid
29	1CMD	3CMD	Valid	Override	Override	Invalid	C	C	Valid
30	1CMD	1CMD	Valid	Override	No Override	Invalid	C	C	Valid
31	1CMD	2CMD	Valid	Override	No Override	Invalid	C	C	Valid
32	1CMD	3CMD	Valid	Override	No Override	Invalid	C	C	Valid
33	1CMD	1CMD	Valid	Override	Override	Invalid	C	NC	Valid
34	1CMD	2CMD	Valid	Override	Override	Invalid	C	NC	Valid
35	1CMD	3CMD	Valid	Override	Override	Invalid	C	NC	Valid
36	1CMD	1CMD	Valid	Override	No Override	Invalid	C	NC	Valid
37	1CMD	2CMD	Valid	Override	No Override	Invalid	C	NC	Valid
38	1CMD	3CMD	Valid	Override	No Override	Invalid	C	NC	Valid
39	1CMD	1CMD	Valid	Override	Override	Invalid	NC	NC	Valid
40	1CMD	2CMD	Valid	Override	Override	Invalid	NC	NC	Valid
41	1CMD	3CMD	Valid	Override	Override	Invalid	NC	NC	Valid

5.1.6 Transformation Inputs SE~SA

	A	B	C	D	E	F	G	H	I	J	L	M
1	Pilot control mode				Manual override				Mission completed			
2	Non-polluted Value 1CMD=MANUAL 2CMD=SCM 3CMD=FPM	Polluted Value	Validity status	SA seen by SE	Non-polluted Value	Polluted Value	Validity status	SA seen by SE	Non-polluted Value	Polluted Value	Implicit Validity	SA seen by SE
3	1CMD	1CMD	Valid		Override	Override	Valid		C	C	Valid	
4	1CMD	2CMD	Valid		Override	Override	Valid		C	C	Valid	
5	1CMD	3CMD	Valid		Override	Override	Valid		C	C	Valid	
6	1CMD	1CMD	Valid		Override	No Override	Valid		C	C	Valid	
7	1CMD	2CMD	Valid		Override	No Override	Valid		C	C	Valid	
8	1CMD	3CMD	Valid		Override	No Override	Valid		C	C	Valid	
9	1CMD	1CMD	Valid		Override	Override	Valid		C	NC	Valid	
10	1CMD	2CMD	Valid		Override	Override	Valid		C	NC	Valid	
11	1CMD	3CMD	Valid		Override	Override	Valid		C	NC	Valid	
12	1CMD	1CMD	Valid		Override	No Override	Valid		C	NC	Valid	
13	1CMD	2CMD	Valid		Override	No Override	Valid		C	NC	Valid	
14	1CMD	3CMD	Valid		Override	No Override	Valid		C	NC	Valid	
15	1CMD	1CMD	Valid		Override	Override	Valid		NC	NC	Valid	
16	1CMD	2CMD	Valid		Override	Override	Valid		NC	NC	Valid	
17	1CMD	3CMD	Valid		Override	Override	Valid		NC	NC	Valid	
18	1CMD	1CMD	Valid		Override	No Override	Valid		NC	NC	Valid	
19	1CMD	2CMD	Valid		Override	No Override	Valid		NC	NC	Valid	
20	1CMD	3CMD	Valid		Override	No Override	Valid		NC	NC	Valid	
21	1CMD	1CMD	Valid		Override	Override	Valid		NC	C	Valid	
22	1CMD	2CMD	Valid		Override	Override	Valid		NC	C	Valid	
23	1CMD	3CMD	Valid		Override	Override	Valid		NC	C	Valid	
24	1CMD	1CMD	Valid		Override	No Override	Valid		NC	C	Valid	
25	1CMD	2CMD	Valid		Override	No Override	Valid		NC	C	Valid	
26	1CMD	3CMD	Valid		Override	No Override	Valid		NC	C	Valid	
27	1CMD	1CMD	Valid		Override	Override	Invalid		C	C	Valid	
28	1CMD	2CMD	Valid		Override	Override	Invalid		C	C	Valid	
29	1CMD	3CMD	Valid		Override	Override	Invalid		C	C	Valid	
30	1CMD	1CMD	Valid		Override	No Override	Invalid		C	C	Valid	
31	1CMD	2CMD	Valid		Override	No Override	Invalid		C	C	Valid	
32	1CMD	3CMD	Valid		Override	No Override	Invalid		C	C	Valid	
33	1CMD	1CMD	Valid		Override	Override	Invalid		C	NC	Valid	
34	1CMD	2CMD	Valid		Override	Override	Invalid		C	NC	Valid	
35	1CMD	3CMD	Valid		Override	Override	Invalid		C	NC	Valid	
36	1CMD	1CMD	Valid		Override	No Override	Invalid		C	NC	Valid	
37	1CMD	2CMD	Valid		Override	No Override	Invalid		C	NC	Valid	
38	1CMD	3CMD	Valid		Override	No Override	Invalid		C	NC	Valid	
39	1CMD	1CMD	Valid		Override	Override	Invalid		NC	NC	Valid	
40	1CMD	2CMD	Valid		Override	Override	Invalid		NC	NC	Valid	
41	1CMD	3CMD	Valid		Override	Override	Invalid		NC	NC	Valid	

	A	B	C	D	E	F	G	H	I	J	L	M	
1	Pilot control mode				Manual override				Mission completed				
2	Non-polluted Value 1CMD=MANUAL 2CMD=SCM 3CMD=FPM	Polluted Value	Validity status	SA seen by SE	Non-polluted Value	Polluted Value	Validity status	SA seen by SE	Non-polluted Value	Polluted Value	Implicit Validity	SA seen by SE	
3	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	C	C	Valid	PRESENT	
4	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	C	Valid	PRESENT	
5	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	C	Valid	PRESENT	
6	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	C	C	Valid	PRESENT	
7	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	C	C	Valid	PRESENT	
8	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	C	C	Valid	PRESENT	
9	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	C	NC	Valid	ERR	
10	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	NC	Valid	ERR	
11	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	NC	Valid	ERR	
12	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	C	NC	Valid	ERR	
13	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	C	NC	Valid	ERR	
14	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	C	NC	Valid	ERR	
15	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	NC	NC	Valid	ABSENT	
16	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	NC	Valid	ABSENT	
17	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	NC	Valid	ABSENT	
18	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	NC	NC	Valid	ABSENT	
19	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	NC	Valid	ABSENT	
20	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	NC	Valid	ABSENT	
	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	NC	C	Valid	ERR	21
	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	C	Valid	ERR	22
	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	C	Valid	ERR	23
	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	NC	C	Valid	ERR	24
	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	C	Valid	ERR	25
	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	C	Valid	ERR	26
	1CMD	1CMD	Valid	MANUAL	Override	Override	Invalid	LOST	C	C	Valid	PRESENT	27
	1CMD	2CMD	Valid	ERR	Override	Override	Invalid	LOST	C	C	Valid	PRESENT	28
	1CMD	3CMD	Valid	ERR	Override	Override	Invalid	LOST	C	C	Valid	PRESENT	29
	1CMD	1CMD	Valid	MANUAL	Override	No Override	Invalid	LOST	C	C	Valid	PRESENT	30
	1CMD	2CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	C	Valid	PRESENT	31
	1CMD	3CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	C	Valid	PRESENT	32
	1CMD	1CMD	Valid	MANUAL	Override	Override	Invalid	LOST	C	NC	Valid	ERR	33
	1CMD	2CMD	Valid	ERR	Override	Override	Invalid	LOST	C	NC	Valid	ERR	34
	1CMD	3CMD	Valid	ERR	Override	Override	Invalid	LOST	C	NC	Valid	ERR	35
	1CMD	1CMD	Valid	MANUAL	Override	No Override	Invalid	LOST	C	NC	Valid	ERR	36
	1CMD	2CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	NC	Valid	ERR	37
	1CMD	3CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	NC	Valid	ERR	38
	1CMD	1CMD	Valid	MANUAL	Override	Override	Invalid	LOST	NC	NC	Valid	ABSENT	39

5.1.7 Compute Output SE non-polluted and polluted values

	A	B	C	D	E	F	G	H	I	J	L	M	R
1	Pilot control mode				Manual override				Mission completed				Selected control mode
2	Non-polluted Value 1CMD=MANUAL 2CMD=SCM 3CMD=FPM	Polluted Value	Validity status	SA seen by SE	Non-polluted Value	Polluted Value	Validity status	SA seen by SE	Non-polluted Value	Polluted Value	Implicit Validity	SA seen by SE	Non-polluted Value
3	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	C	C	Valid	PRESENT	MANUAL
4	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	C	Valid	PRESENT	MANUAL

[redacted]

	A	B	C	D	E	F	G	H	I	J	L	M	R	S
1	Pilot control mode				Manual override				Mission completed				Selected control mode	
2	Non-polluted Value 1CMD=MANUAL 2CMD=SCM 3CMD=FPM	Polluted Value	Validity status	SA seen by SE	Non-polluted Value	Polluted Value	Validity status	SA seen by SE	Non-polluted Value	Polluted Value	Implicit Validity	SA seen by SE	Non-polluted Value	Polluted Value
3	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	C	C	Valid	PRESENT	MANUAL	MANUAL
4	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	C	Valid	PRESENT	MANUAL	MANUAL
5	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	C	Valid	PRESENT	MANUAL	MANUAL
6	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	C	C	Valid	PRESENT	MANUAL	MANUAL
7	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	C	C	Valid	PRESENT	MANUAL	MANUAL
8	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	C	C	Valid	PRESENT	MANUAL	MANUAL
9	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	C	NC	Valid	ERR	MANUAL	MANUAL
10	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	NC	Valid	ERR	MANUAL	MANUAL
11	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	NC	Valid	ERR	MANUAL	MANUAL
12	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	C	NC	Valid	ERR	MANUAL	MANUAL
13	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	C	NC	Valid	ERR	MANUAL	AUTO
14	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	C	NC	Valid	ERR	MANUAL	AUTO
15	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	NC	NC	Valid	ABSENT	MANUAL	MANUAL
16	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	NC	Valid	ABSENT	MANUAL	MANUAL
17	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	NC	Valid	ABSENT	MANUAL	MANUAL
18	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	NC	NC	Valid	ABSENT	MANUAL	MANUAL
19	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	NC	Valid	ABSENT	MANUAL	AUTO
20	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	NC	Valid	ABSENT	MANUAL	AUTO
21	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	NC	C	Valid	ERR	MANUAL	MANUAL
22	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	C	Valid	ERR	MANUAL	MANUAL
23	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	C	Valid	ERR	MANUAL	MANUAL
24	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	NC	C	Valid	ERR	MANUAL	MANUAL
25	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	C	Valid	ERR	MANUAL	MANUAL
26	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	C	Valid	ERR	MANUAL	MANUAL
27	1CMD	1CMD	Valid	MANUAL	Override	Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL
28	1CMD	2CMD	Valid	ERR	Override	Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL
29	1CMD	3CMD	Valid	ERR	Override	Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL
30	1CMD	1CMD	Valid	MANUAL	Override	No Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL
31	1CMD	2CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL
32	1CMD	3CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL
33	1CMD	1CMD	Valid	MANUAL	Override	Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL
34	1CMD	2CMD	Valid	ERR	Override	Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL
35	1CMD	3CMD	Valid	ERR	Override	Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL
36	1CMD	1CMD	Valid	MANUAL	Override	No Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL
37	1CMD	2CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL
38	1CMD	3CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL
39	1CMD	1CMD	Valid	MANUAL	Override	Override	Invalid	LOST	NC	NC	Valid	ABSENT	MANUAL	MANUAL
40	1CMD	2CMD	Valid	ERR	Override	Override	Invalid	LOST	NC	NC	Valid	ABSENT	MANUAL	MANUAL
41	1CMD	3CMD	Valid	ERR	Override	Override	Invalid	LOST	NC	NC	Valid	ABSENT	MANUAL	MANUAL

	A	B	C	D	E	F	G	H	I	J	L	M	R	S	T
1	Pilot control mode				Manual override				Mission completed				Selected control mode		
2	Non-polluted Value 1CMD=MANUAL 2CMD=SCM 3CMD=FPM	Polluted Value	Validity status	SA seen by SE	Non-polluted Value	Polluted Value	Validity status	SA seen by SE	Non-polluted Value	Polluted Value	Implicit Validity	SA seen by SE	Non-polluted Value	Polluted Value	Implicit Validity
3	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid
4	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid
5	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid
6	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid
7	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid
8	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid
9	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	C	NC	Valid	ERR	MANUAL	MANUAL	Valid
10	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	NC	Valid	ERR	MANUAL	MANUAL	Valid
11	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	NC	Valid	ERR	MANUAL	MANUAL	Valid
12	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	C	NC	Valid	ERR	MANUAL	MANUAL	Valid
13	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	C	NC	Valid	ERR	MANUAL	AUTO	Valid
14	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	C	NC	Valid	ERR	MANUAL	AUTO	Valid
15	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	NC	NC	Valid	ABSENT	MANUAL	MANUAL	Valid
16	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	NC	Valid	ABSENT	MANUAL	MANUAL	Valid
17	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	NC	Valid	ABSENT	MANUAL	MANUAL	Valid
18	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	NC	NC	Valid	ABSENT	MANUAL	MANUAL	Valid
19	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	NC	Valid	ABSENT	MANUAL	AUTO	Valid
20	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	NC	Valid	ABSENT	MANUAL	AUTO	Valid
21	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	NC	C	Valid	ERR	MANUAL	MANUAL	Valid
22	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	C	Valid	ERR	MANUAL	MANUAL	Valid
23	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	C	Valid	ERR	MANUAL	MANUAL	Valid
24	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	NC	C	Valid	ERR	MANUAL	MANUAL	Valid
25	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	C	Valid	ERR	MANUAL	MANUAL	Valid
26	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	C	Valid	ERR	MANUAL	MANUAL	Valid
27	1CMD	1CMD	Valid	MANUAL	Override	Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid
28	1CMD	2CMD	Valid	ERR	Override	Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid
29	1CMD	3CMD	Valid	ERR	Override	Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid
30	1CMD	1CMD	Valid	MANUAL	Override	No Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid
31	1CMD	2CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid
32	1CMD	3CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid
33	1CMD	1CMD	Valid	MANUAL	Override	Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL	Valid
34	1CMD	2CMD	Valid	ERR	Override	Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL	Valid
35	1CMD	3CMD	Valid	ERR	Override	Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL	Valid
36	1CMD	1CMD	Valid	MANUAL	Override	No Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL	Valid
37	1CMD	2CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL	Valid
38	1CMD	3CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL	Valid
39	1CMD	1CMD	Valid	MANUAL	Override	Override	Invalid	LOST	NC	NC	Valid	ABSENT	MANUAL	MANUAL	Valid
40	1CMD	2CMD	Valid	ERR	Override	Override	Invalid	LOST	NC	NC	Valid	ABSENT	MANUAL	MANUAL	Valid
41	1CMD	3CMD	Valid	ERR	Override	Override	Invalid	LOST	NC	NC	Valid	ABSENT	MANUAL	MANUAL	Valid

5.1.8 Transformation Outputs SE~SA

	A	B	C	D	E	F	G	H	I	J	L	M	R	S	T	U
1	Pilot control mode				Manual override				Mission completed				Selected control mode			
2	Non-polluted Value 1CMD=MANUAL 2CMD=SCM 3CMD=FPM	Polluted Value	Validity status	SA seen by SE	Non-polluted Value	Polluted Value	Validity status	SA seen by SE	Non-polluted Value	Polluted Value	Implicit Validity	SA seen by SE	Non-polluted Value	Polluted Value	Implicit Validity	SA seen by SE
3	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid	MANUAL
4	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid	MANUAL
5	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid	MANUAL
6	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid	MANUAL
7	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid	MANUAL
8	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid	MANUAL
9	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	C	NC	Valid	ERR	MANUAL	MANUAL	Valid	MANUAL
10	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	NC	Valid	ERR	MANUAL	MANUAL	Valid	MANUAL
11	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	C	NC	Valid	ERR	MANUAL	MANUAL	Valid	MANUAL
12	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	C	NC	Valid	ERR	MANUAL	MANUAL	Valid	MANUAL
13	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	C	NC	Valid	ERR	MANUAL	AUTO	Valid	ERR
14	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	C	NC	Valid	ERR	MANUAL	AUTO	Valid	ERR
15	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	NC	NC	Valid	ABSENT	MANUAL	MANUAL	Valid	MANUAL
16	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	NC	Valid	ABSENT	MANUAL	MANUAL	Valid	MANUAL
17	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	NC	Valid	ABSENT	MANUAL	MANUAL	Valid	MANUAL
18	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	NC	NC	Valid	ABSENT	MANUAL	MANUAL	Valid	MANUAL
19	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	NC	Valid	ABSENT	MANUAL	AUTO	Valid	ERR
20	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	NC	Valid	ABSENT	MANUAL	AUTO	Valid	ERR
21	1CMD	1CMD	Valid	MANUAL	Override	Override	Valid	PRESENT	NC	C	Valid	ERR	MANUAL	MANUAL	Valid	MANUAL
22	1CMD	2CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	C	Valid	ERR	MANUAL	MANUAL	Valid	MANUAL
23	1CMD	3CMD	Valid	ERR	Override	Override	Valid	PRESENT	NC	C	Valid	ERR	MANUAL	MANUAL	Valid	MANUAL
24	1CMD	1CMD	Valid	MANUAL	Override	No Override	Valid	ERR	NC	C	Valid	ERR	MANUAL	MANUAL	Valid	MANUAL
25	1CMD	2CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	C	Valid	ERR	MANUAL	MANUAL	Valid	MANUAL
26	1CMD	3CMD	Valid	ERR	Override	No Override	Valid	ERR	NC	C	Valid	ERR	MANUAL	MANUAL	Valid	MANUAL
27	1CMD	1CMD	Valid	MANUAL	Override	Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid	MANUAL
28	1CMD	2CMD	Valid	ERR	Override	Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid	MANUAL
29	1CMD	3CMD	Valid	ERR	Override	Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid	MANUAL
30	1CMD	1CMD	Valid	MANUAL	Override	No Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid	MANUAL
31	1CMD	2CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid	MANUAL
32	1CMD	3CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	C	Valid	PRESENT	MANUAL	MANUAL	Valid	MANUAL
33	1CMD	1CMD	Valid	MANUAL	Override	Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL	Valid	MANUAL
34	1CMD	2CMD	Valid	ERR	Override	Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL	Valid	MANUAL
35	1CMD	3CMD	Valid	ERR	Override	Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL	Valid	MANUAL
36	1CMD	1CMD	Valid	MANUAL	Override	No Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL	Valid	MANUAL
37	1CMD	2CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL	Valid	MANUAL
38	1CMD	3CMD	Valid	ERR	Override	No Override	Invalid	LOST	C	NC	Valid	ERR	MANUAL	MANUAL	Valid	MANU
39	1CMD	1CMD	Valid	MANUAL	Override	Override	Invalid	LOST	NC	NC	Valid	ABSENT	MANUAL	MANUAL	Valid	MANU
40	1CMD	2CMD	Valid	ERR	Override	Override	Invalid	LOST	NC	NC	Valid	ABSENT	MANUAL	MANUAL	Valid	MANU
41	1CMD	3CMD	Valid	ERR	Override	Override	Invalid	LOST	NC	NC	Valid	ABSENT	MANUAL	MANUAL	Valid	MANU

5.1.9 Remove same combinations or select one

	D	H	M	U
1	Pilot control mode	Manual override	Mission completed	Selected control mode
2	SA seen by SE	SA seen by SE	SA seen by SE	SA seen by SE
3	MANUAL	PRESENT	PRESENT	MANUAL
4	ERR	PRESENT	PRESENT	MANUAL
5	ERR	PRESENT	PRESENT	MANUAL
6	MANUAL	ERR	PRESENT	MANUAL
7	ERR	ERR	PRESENT	MANUAL
8	ERR	ERR	PRESENT	MANUAL
9	MANUAL	PRESENT	ERR	MANUAL
10	ERR	PRESENT	ERR	MANUAL
11	ERR	PRESENT	ERR	MANUAL
12	MANUAL	ERR	ERR	MANUAL
13	ERR	ERR	ERR	ERR
14	ERR	ERR	ERR	ERR
15	MANUAL	PRESENT	ABSENT	MANUAL
16	ERR	PRESENT	ABSENT	MANUAL
17	ERR	PRESENT	ABSENT	MANUAL
18	MANUAL	ERR	ABSENT	MANUAL
19	ERR	ERR	ABSENT	ERR
20	ERR	ERR	ABSENT	ERR
21	MANUAL	PRESENT	ERR	MANUAL
22	ERR	PRESENT	ERR	MANUAL
23	ERR	PRESENT	ERR	MANUAL
24	MANUAL	ERR	ERR	MANUAL
25	ERR	ERR	ERR	MANUAL
26	ERR	ERR	ERR	MANUAL
27	MANUAL	LOST	PRESENT	MANUAL
28	ERR	LOST	PRESENT	MANUAL
29	ERR	LOST	PRESENT	MANUAL
30	MANUAL	LOST	PRESENT	MANUAL
31	ERR	LOST	PRESENT	MANUAL
32	ERR	LOST	PRESENT	MANUAL
33	MANUAL	LOST	ERR	MANUAL
34	ERR	LOST	ERR	MANUAL
35	ERR	LOST	ERR	MANUAL
36	MANUAL	LOST	ERR	MANUAL
37	ERR	LOST	ERR	MANUAL
38	ERR	LOST	ERR	MANUAL
39	MANUAL	LOST	ABSENT	MANUAL
40	ERR	LOST	ABSENT	MANUAL
41	ERR	LOST	ABSENT	MANUAL

	A	B	C	D
1	Pilot Manual Control	Manual Override	Mission Completed	OutputMode
2	MANUAL	PRESENT	PRESENT	MANUAL
3	MANUAL	PRESENT	ABSENT	MANUAL
4	MANUAL	PRESENT	ERR	MANUAL
5	MANUAL	ABSENT	PRESENT	MANUAL
6	MANUAL	ABSENT	ABSENT	MANUAL
7	MANUAL	ABSENT	ERR	MANUAL
8	MANUAL	LOST	PRESENT	MANUAL
9	MANUAL	LOST	ABSENT	MANUAL
10	MANUAL	LOST	ERR	MANUAL
11	MANUAL	ERR	PRESENT	MANUAL
12	MANUAL	ERR	ABSENT	MANUAL
13	MANUAL	ERR	ERR	MANUAL
14	AUTO	PRESENT	PRESENT	MANUAL
15	AUTO	PRESENT	ABSENT	MANUAL
16	AUTO	PRESENT	ERR	MANUAL
17	AUTO	ABSENT	PRESENT	MANUAL
18	AUTO	ABSENT	ABSENT	AUTO
19	AUTO	ABSENT	ERR	ERR
20	AUTO	LOST	PRESENT	MANUAL
21	AUTO	LOST	ABSENT	MANUAL
22	AUTO	LOST	ERR	MANUAL
23	AUTO	ERR	PRESENT	MANUAL
24	AUTO	ERR	ABSENT	ERR
25	AUTO	ERR	ERR	MANUAL/ERR
26	ERR	PRESENT	PRESENT	MANUAL
27	ERR	PRESENT	ABSENT	MANUAL
28	ERR	PRESENT	ERR	MANUAL
29	ERR	ABSENT	PRESENT	MANUAL
30	ERR	ABSENT	ABSENT	AUTO/ERR
31	ERR	ABSENT	ERR	MANUAL/ERR
32	ERR	LOST	PRESENT	MANUAL
33	ERR	LOST	ABSENT	MANUAL
34	ERR	LOST	ERR	MANUAL

	A	B	C	D	E	F	G	H	I	J	K	L	O	P	Q	R
1	Pilot control mode				Manual override				Mission completed				Selected control mode			
2	Non-polluted Value 1CMD=MANUAL 2CMD=SCM 3CMD=FPM	Polluted Value	Validity status	SA seen by SE	Non-polluted Value	Polluted Value	Validity status	SA seen by SE	Non-polluted Value	Polluted Value	SA seen by SE	Implicit validity	Non-polluted Value	Polluted Value	Implicit validity	SA seen by SE
204	2CMD	2CMD	Valid	AUTO	Override	No Override	Valid	ERR	C	NC	ERR	Valid	MANUAL	AUTO	Valid	ERR
216	2CMD	2CMD	Valid	AUTO	Override	No Override	Valid	ERR	NC	C	ERR	Valid	MANUAL	MANUAL	Valid	MANUAL
252	2CMD	2CMD	Valid	AUTO	No Override	Override	Valid	ERR	C	NC	ERR	Valid	MANUAL	MANUAL	Valid	MANUAL
264	2CMD	2CMD	Valid	AUTO	No Override	Override	Valid	ERR	NC	C	ERR	Valid	AUTO	MANUAL	Valid	ERR
396	3CMD	3CMD	Valid	AUTO	Override	No Override	Valid	ERR	C	NC	ERR	Valid	MANUAL	AUTO	Valid	ERR
408	3CMD	3CMD	Valid	AUTO	Override	No Override	Valid	ERR	NC	C	ERR	Valid	MANUAL	MANUAL	Valid	MANUAL
444	3CMD	3CMD	Valid	AUTO	No Override	Override	Valid	ERR	C	NC	ERR	Valid	MANUAL	MANUAL	Valid	MANUAL
456	3CMD	3CMD	Valid	AUTO	No Override	Override	Valid	ERR	NC	C	ERR	Valid	AUTO	MANUAL	Valid	ERR

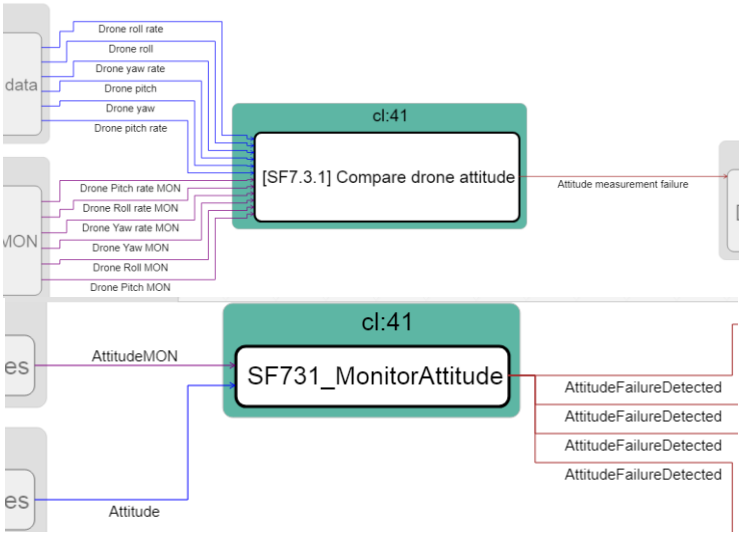
5.1.10 Comparison

	A	B	C	D	E
1		Pilot Manual Control	Manual Override	Mission Completed	OutputMode
2	A	AUTO	PRESENT	PRESENT	MANUAL
3	B	AUTO	PRESENT	ABSENT	MANUAL
4	C	AUTO	ABSENT	PRESENT	MANUAL
5	D	AUTO	ABSENT	ABSENT	AUTO
6	E	MANUAL	PRESENT	PRESENT	MANUAL
7	F	MANUAL	PRESENT	ABSENT	MANUAL
8	G	MANUAL	ABSENT	PRESENT	MANUAL
9	H	MANUAL	ABSENT	ABSENT	MANUAL
10	I	ERRONEOUS	PRESENT	PRESENT	MANUAL
11	J	ERRONEOUS	PRESENT	ABSENT	MANUAL
12	K	ERRONEOUS	ABSENT	PRESENT	MANUAL
13	L	ERRONEOUS	ABSENT	ABSENT	ERRONEOUS
14	M	LOST	PRESENT	PRESENT	MANUAL
15	N	LOST	PRESENT	ABSENT	MANUAL
16	O	LOST	ABSENT	PRESENT	MANUAL
17	P	LOST	ABSENT	ABSENT	MANUAL

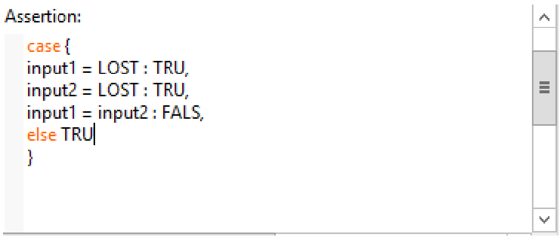
	A	B	C	D	E
1	Pilot Manual Control	Manual Override	Mission Completed	OutputMode	Traçabilité w TdV SA AR
2	MANUAL	PRESENT	PRESENT	MANUAL	E
3	MANUAL	PRESENT	ABSENT	MANUAL	F
4	MANUAL	PRESENT	ERR	MANUAL	
5	MANUAL	ABSENT	PRESENT	MANUAL	G
6	MANUAL	ABSENT	ABSENT	MANUAL	H
7	MANUAL	ABSENT	ERR	MANUAL	
8	MANUAL	LOST	PRESENT	MANUAL	
9	MANUAL	LOST	ABSENT	MANUAL	
10	MANUAL	LOST	ERR	MANUAL	
11	MANUAL	ERR	PRESENT	MANUAL	
12	MANUAL	ERR	ABSENT	MANUAL	
13	MANUAL	ERR	ERR	MANUAL	
14	AUTO	PRESENT	PRESENT	MANUAL	A
15	AUTO	PRESENT	ABSENT	MANUAL	B
16	AUTO	PRESENT	ERR	MANUAL	
17	AUTO	ABSENT	PRESENT	MANUAL	C
18	AUTO	ABSENT	ABSENT	AUTO	D
19	AUTO	ABSENT	ERR	ERR	
20	AUTO	LOST	PRESENT	MANUAL	
21	AUTO	LOST	ABSENT	MANUAL	
22	AUTO	LOST	ERR	MANUAL	
23	AUTO	ERR	PRESENT	MANUAL	
24	AUTO	ERR	ABSENT	ERR	
25	AUTO	ERR	ERR	MANUAL/ERR	
26	ERR	PRESENT	PRESENT	MANUAL	I
27	ERR	PRESENT	ABSENT	MANUAL	J
28	ERR	PRESENT	ERR	MANUAL	
29	ERR	ABSENT	PRESENT	MANUAL	K
30	ERR	ABSENT	ABSENT	AUTO/ERR	L
31	ERR	ABSENT	ERR	MANUAL/ERR	
32	ERR	LOST	PRESENT	MANUAL	
33	ERR	LOST	ABSENT	MANUAL	
34	ERR	LOST	ERR	MANUAL	
35	ERR	ERR	PRESENT	MANUAL	
36	ERR	ERR	ABSENT	MANUAL/ERR	
37	ERR	ERR	ERR	MANUAL/ERR	
38	LOST	PRESENT	PRESENT	MANUAL	M
39	LOST	PRESENT	ABSENT	MANUAL	N
40	LOST	PRESENT	ERR	MANUAL	
41	LOST	ABSENT	PRESENT	MANUAL	O
42	LOST	ABSENT	ABSENT	MANUAL	P
43	LOST	ABSENT	ERR	MANUAL	
44	LOST	LOST	PRESENT	MANUAL	
45	LOST	LOST	ABSENT	MANUAL	
46	LOST	LOST	ERR	MANUAL	
47	LOST	ERR	PRESENT	MANUAL	
48	LOST	ERR	ABSENT	MANUAL	
49	LOST	ERR	ERR	MANUAL	

5.1.11 Conclusions

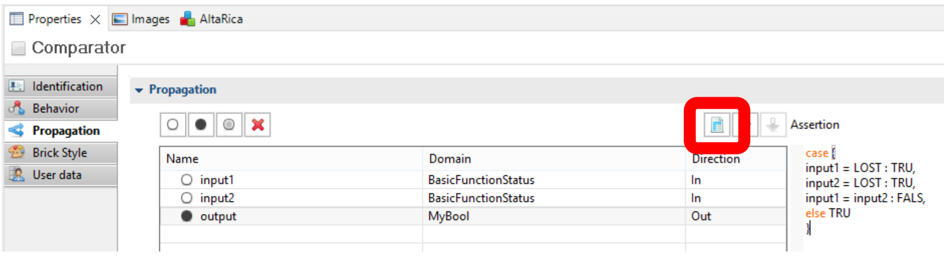
5.2 PoC2

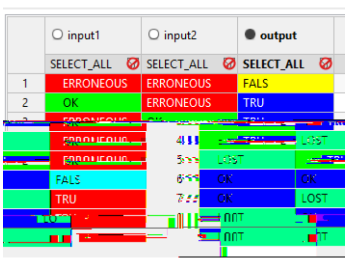

Drone roll rate
Drone roll
Drone yaw rate
Drone pitch
Drone yaw
Drone pitch rate
data
cl:41
[SF7.3.1] Compare drone attitude
Attitude measurement failure
Drone Pitch rate MON
Drone Roll rate MON
Drone Yaw rate MON
Drone Yaw MON
Drone Roll MON
Drone Pitch MON
cl:41
SF731_MonitorAttitude
AttitudeMON
Attitude
AttitudeFailureDetected
AttitudeFailureDetected
AttitudeFailureDetected
AttitudeFailureDetected

5.2.1 SA Model and specification



5.2.2 Expansion of SA Inputs and Outputs (TAIO SA)





5.2.3 SE Model and specification

Ref	Drone yaw status	Drone yaw MON status	Result of drone yaw discrepancy check (|drone yaw -drone yaw MON|<T_yaw)	Drone yaw measurement failure
A	[illegible]	[illegible]	[illegible]	[illegible]
B	[illegible]	[illegible]	[illegible]	[illegible]
C	INVALID	N/A	N/A	[illegible]
D	N/A	INVALID	N/A	[illegible]

Ref	Drone yaw rate status	Drone yaw rate MON status	Result of drone yaw rate discrepancy check (|drone yaw rate -drone yaw rate MON|<T_yaw_rate)	Drone yaw rate measurement failure
E	VALID	VALID	OK	NO FAILURE
F	VALID	VALID	KO	FAILURE DETECTED
G	INVALID	N/A	N/A	FAILURE DETECTED
H	N/A	INVALID	N/A	FAILURE DETECTED

Ref	Drone pitch status	Drone pitch MON status	Result of drone pitch discrepancy check (|drone pitch -drone pitch MON|<T_pitch)	Drone pitch measurement failure
I	VALID	VALID	OK	NO FAILURE
J	VALID	VALID	KO	FAILURE DETECTED
K	INVALID	N/A	N/A	FAILURE DETECTED
L	N/A	INVALID	N/A	FAILURE DETECTED

Ref	[illegible] status	[illegible] status	Result of drone pitch rate discrepancy [illegible]	[illegible] measurement failure
M	VALID	VALID	OK	NO FAILURE
N	VALID	VALID	KO	FAILURE DETECTED
O	INVALID	N/A	N/A	FAILURE DETECTED
P	N/A	INVALID	N/A	FAILURE DETECTED

Ref	Drone roll status	Drone roll MON status	Result of drone roll discrepancy check (|drone roll -drone roll MON|<T_roll)	Drone roll measurement failur
Q	VALID	VALID	OK	NO FAILURE
R	VALID	VALID	KO	FAILURE DETECTED
S	INVALID	N/A	N/A	FAILURE DETECTED
T	N/A	INVALID	N/A	FAILURE DETECTED

Ref	Drone roll rate status	Drone roll rate MON status	Result of drone roll rate discrepancy check (|drone roll rate -drone roll rate MON|<T_roll_rate)	Drone roll rate measurement failur
U	VALID	VALID	OK	NO FAILURE
V	VALID	VALID	KO	FAILURE DETECTED
W	INVALID	N/A	N/A	FAILURE DETECTED
X	N/A	INVALID	N/A	FAILURE DETECTED

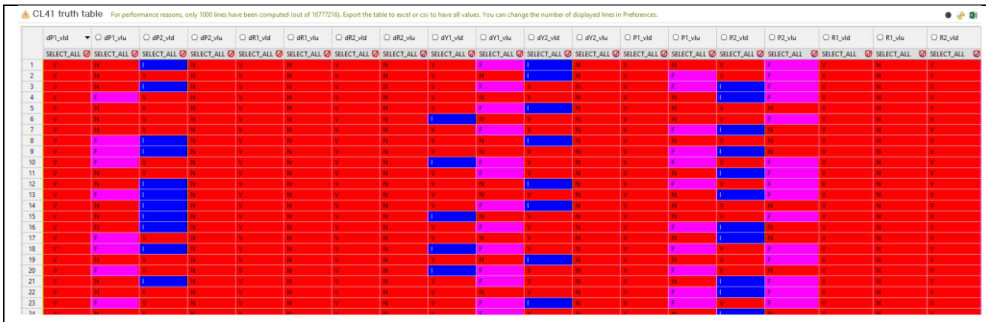
Ref	Drone yaw measurement failure	Drone yaw rate measurement failure	Drone pitch measurement failure	Drone pitch rate measurement failur	Drone roll measurement failure	Drone roll rate measurement failure	Attitude measurement failure
1	NO FAILURE	NO FAILURE	NO FAILURE	NO FAILURE	NO FAILURE	NO FAILURE	NO FAILURE
2	FAILURE DETECTED	N/A	N/A	N/A	N/A	N/A	FAILURE DETECTED
3	N/A	FAILURE DETECTED	N/A	N/A	N/A	N/A	FAILURE DETECTED
4	N/A	N/A	FAILURE DETECTED	N/A	N/A	N/A	FAILURE DETECTED
5	N/A	N/A	N/A	FAILURE DETECTED	N/A	N/A	FAILURE DETECTED
6	N/A	N/A	N/A	N/A	FAILURE DETECTED	N/A	FAILURE DETECTED
7	N/A	N/A	N/A	N/A	N/A	FAILURE DETECTED	FAILURE DETECTED

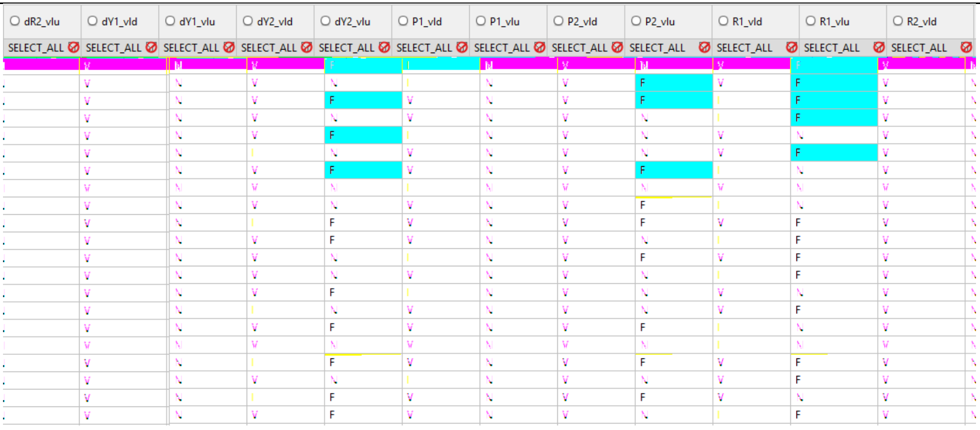
5.2.4 Expansion of SE Inputs (TAIO SE)

- ○
- ○

```
X_status = case {
  (X1_vld = V) and (X2_vld =V) and (P1_vlu = N) and (P2_vlu = N) : n,
Else
f
}
```

```
attitude_failure = case {
  (P_status = n) and (dP_status = n) and (R_status = n) and (dR_status = n) and (Y_status = n) and (dY_status = n) : n,
else
f
}
```





5.2.5 Apply pollution on SE Inputs

Note:

5.2.6 Transformation Inputs SE~SA

5.2.7 Compute Output SE non-polluted and polluted values

5.2.8 Transformation Outputs SE~SA

5.2.9 Remove same combinations or select one

5.2.10 Comparison

5.2.11 Conclusions