



Requested By	Eric Warmbier	Date	4/03/08
Drawing #	T3-2070,2072 thru 2076	Revised From	B To C
Drawing Title	TCS3 Safety Board		
Next Assembly # NA	Telescope		
Next Assembly Title	Telescope		
Reason For Change	Some components were missing in design. Component values needed to be changed based on testing. Minor text and comments were changed in document. Added mods to fix issues.		


Description of Change (From – To). Include marked up prints, etc. where required:

FROM: (PG1, not present)

TO:

1

NOTES:

- Unless otherwise stated:
Resistors have units of ohms, are 1/4 Watt, 1% tolerance
Capacitors are 50V, 5 % or 10% tolerance
-  Green wire modification. Part does not physically have pads on PCB. Artwork does not contain traces or reference designators.
- There are multiple design modifications that should be implemented if a new layout is ever created. Refer to T3-2079 Safety Board HDD (Hardware Description Document).

A

FROM: (PG1, not present)

TO:

6

REV	DESCRIPTION	DATE	BY
- to B	Released board for manufacturing.	2006	F. KESKE
C	Modified board for use in TCS3.	4-02-08	EAW



Description of Change (From – To). Include marked up prints, etc. where required (Continued):

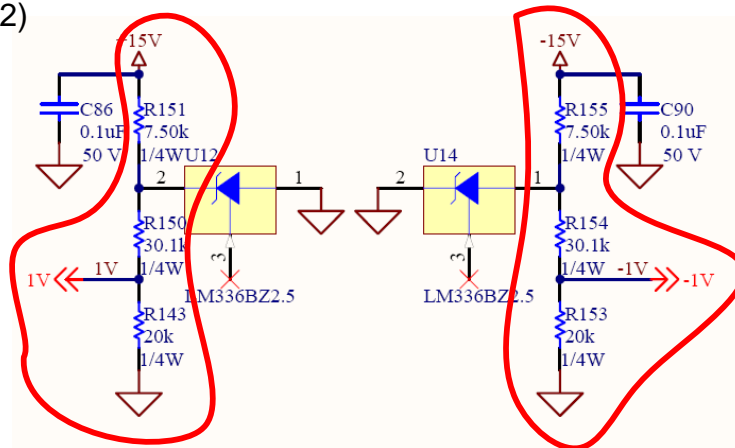
FROM: (all pages)

	Engineer Fred Keske	<i>UH - I</i>
		<i>640 N.</i>
S3 - T3	Revision: -	<i>Hilo, H</i>
1:49 PM	Sheet 1 of 6	<i>USA</i>
atics,PL,CCA\Safety Board Protel\Safety B		

TO:

	Engineer Fred Keske	<i>UH - Institute for Astronomy</i>
		<i>640 N. Aohoku Place</i>
S3 - T3	Revision: C	<i>Hilo, HI 96720</i>
1:46 PM	Sheet 1 of 6	<i>USA</i>
atics,PL,CCA\Safety Board Protel\Safety Board Rev C\Safety		

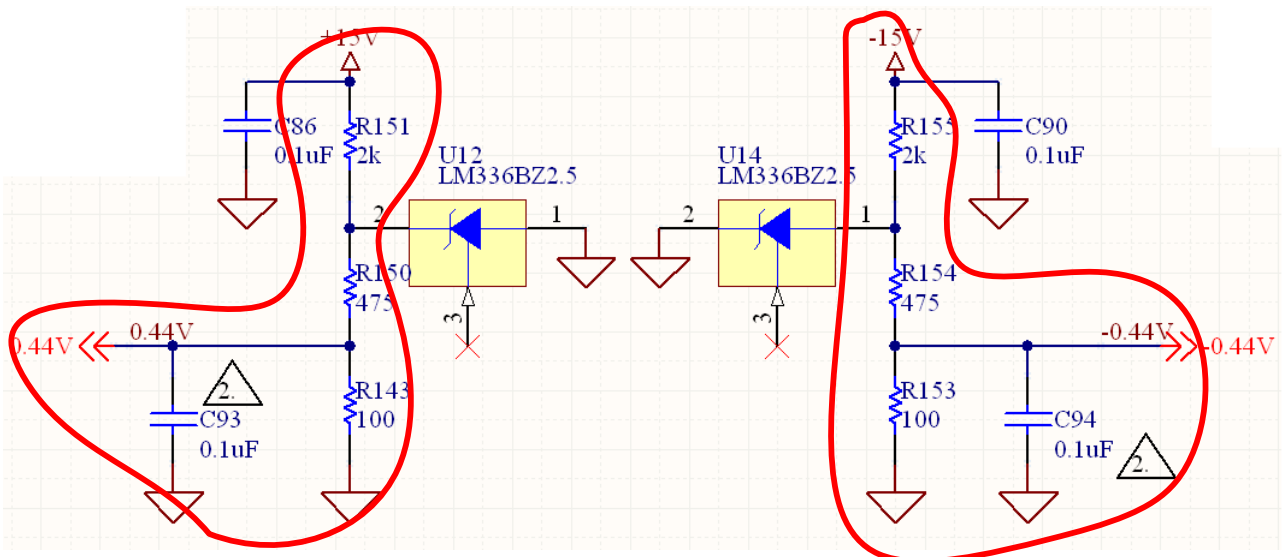
FROM: (PG2)



Reason

Lower values due to high impedance causing loading issues (reference value not accurate). Lower reference value chosen to be within new negative 0.7V supply on comparators.

TO:

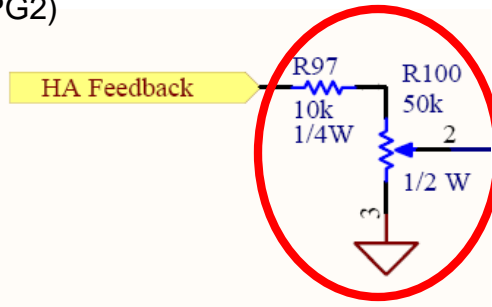


Entire +1V and -1V nets changed to 0.44V and -0.44V nets.



Description of Change (From – To). Include marked up prints, etc. where required (Continued):

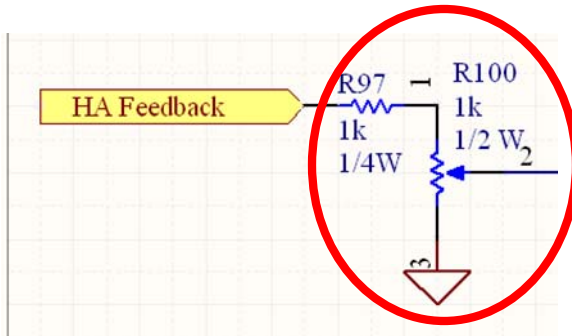
FROM: (PG2)



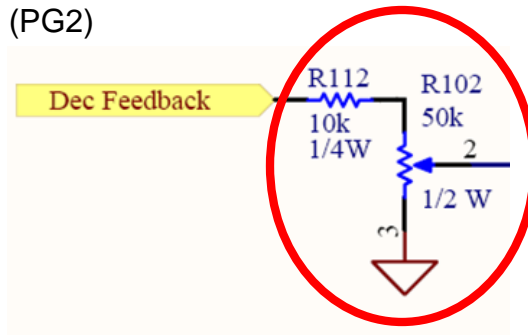
Reason

Lower values due to high impedance causing loading issues. Trip points were not symmetrical for negative and positive polarity.

TO:



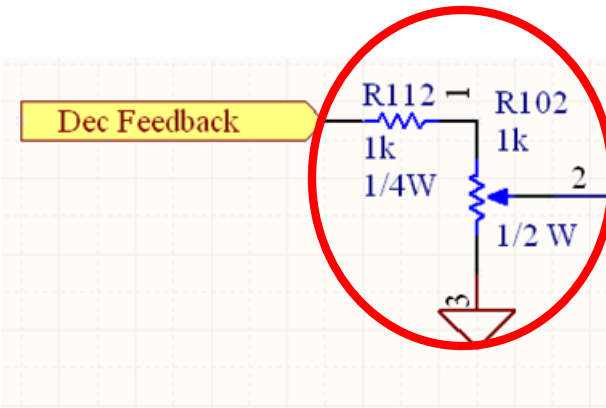
FROM: (PG2)



Reason

Lower values due to high impedance causing loading issues. Trip points were not symmetrical for negative and positive polarity.

TO:

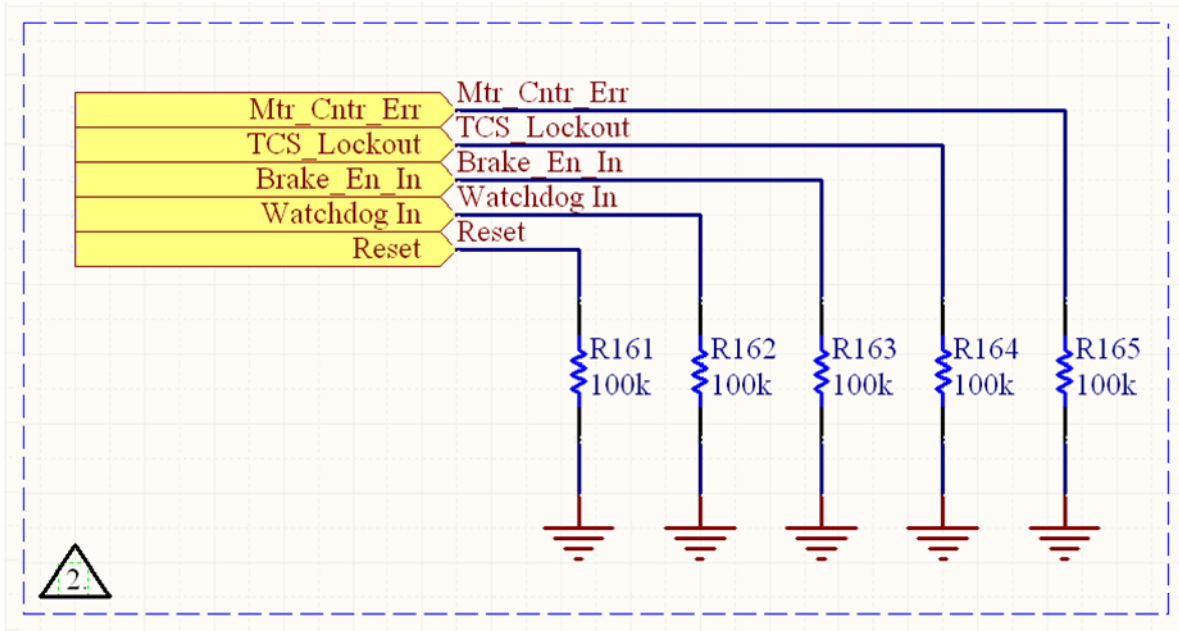




Description of Change (From – To). Include marked up prints, etc. where required (Continued):

FROM: (PG4, not present)

TO:



Reason

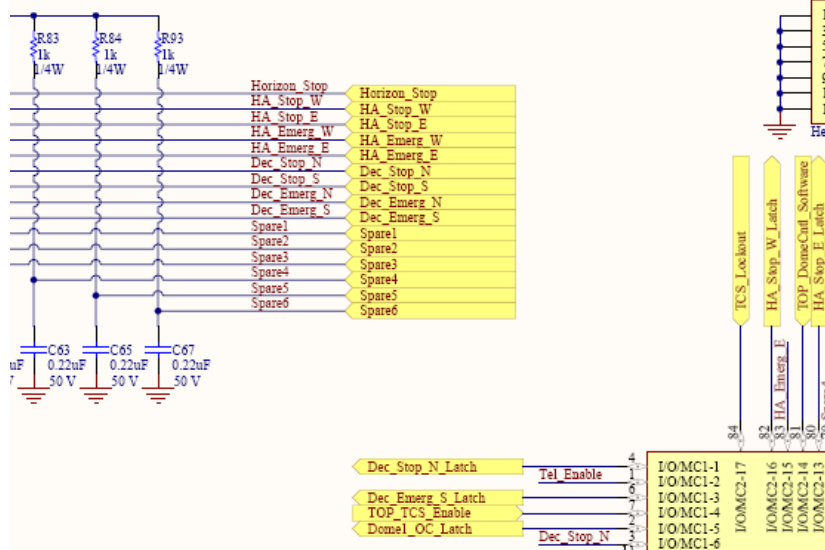
Some of these pins are used in a safety critical way. In the event of a poor connection, they should have a defined, safe state.

Description of Change (From – To). Include marked up prints, etc. where required (Continued):

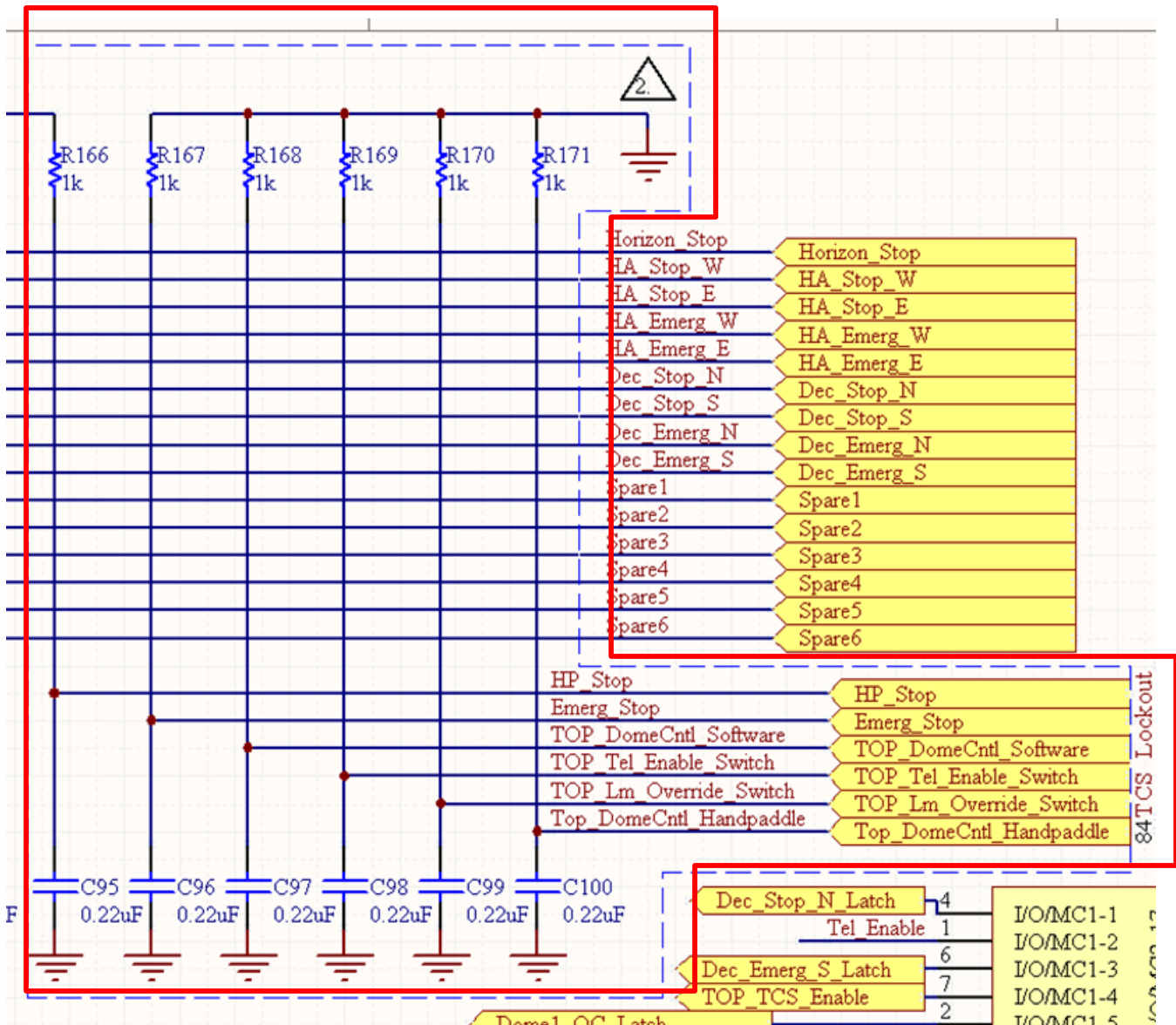
FROM: (PG 4)

Reason

Some of these pins are used in a safety critical way. In the event of a poor connection, they should have a defined, safe state. In addition, they are connected to mechanical switches and should therefore, at a minimum, have some filtering.

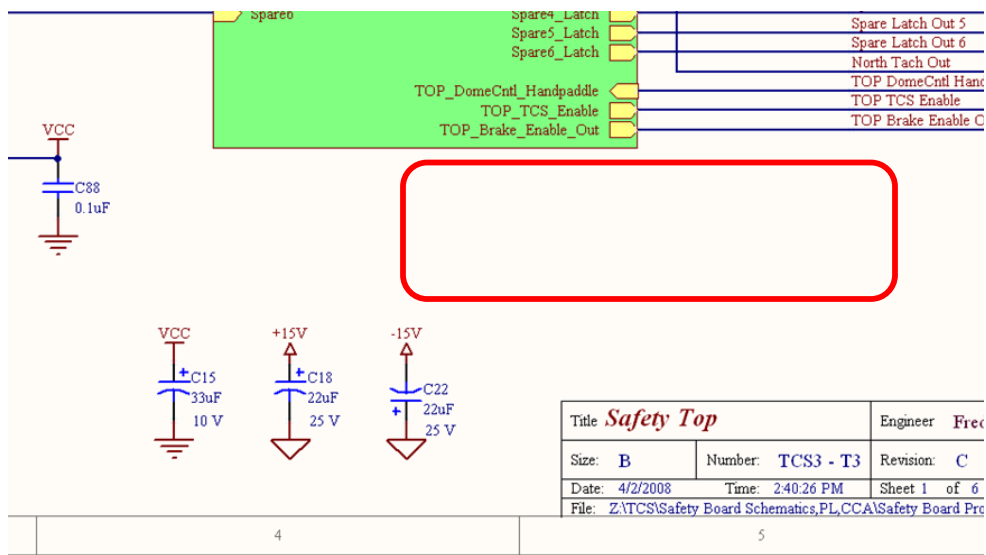


TO:

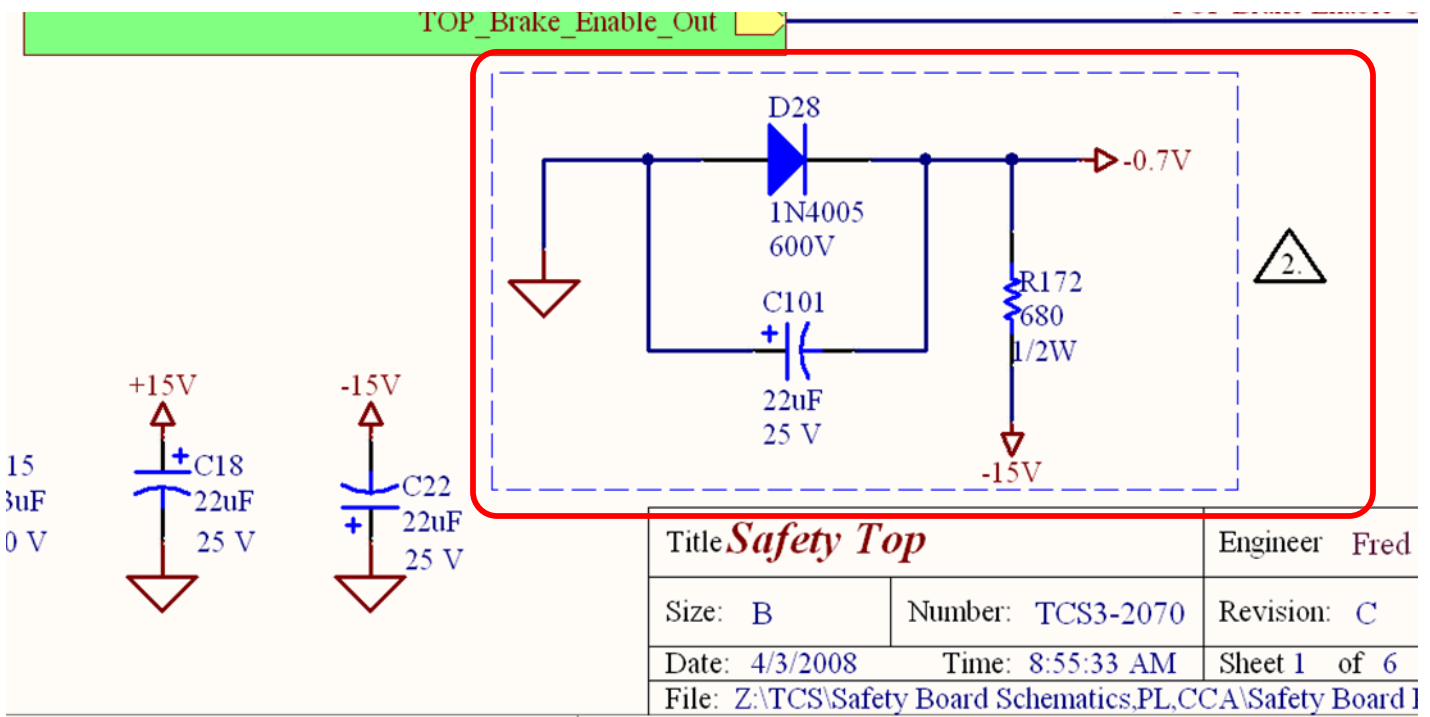


Description of Change (From – To). Include marked up prints, etc. where required (Continued):

FROM: (PG 1)



TO:



Reason

A slightly negative supply needed to be created for only the comparators connected to the CPLD. Comparator negative voltage is now -0.7V. It needed to meet the following:

- 1) Be very simple to add as green wire modification.
- 2) Have a voltage magnitude around -0.5V or so (CPLD min input). Diode is approximately -0.65V. (the saturation output voltage of the comparator is 100 mV+, $-0.65+100mV=-0.55V$).

See T3-2079, Safety Board Hardware Description Document for more details.



Description of Change (From – To). Include marked up prints, etc. where required (Continued):

FROM: (PG 1,4)

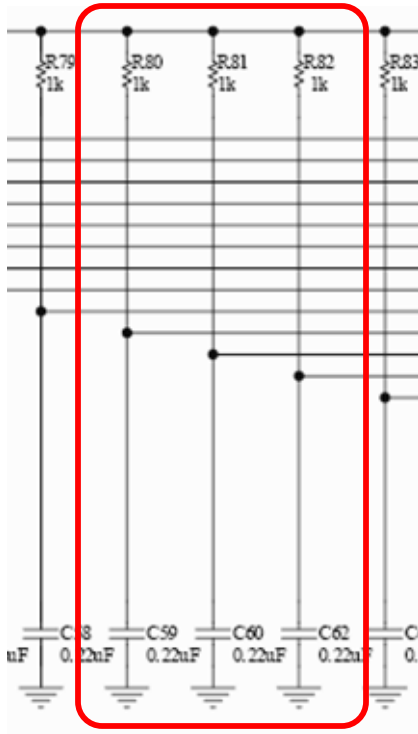
The following signal names changed on sheets 1 and 4:

FROM	TO
Spare1	Watchdog In Mod
Spare2	Tel_Enable
Spare3	Redundant_Series_Tel_Enable
Spare1 Latch	Clocking_Error_Latch
Tel Enable	Tel_Enable_Old_Unused

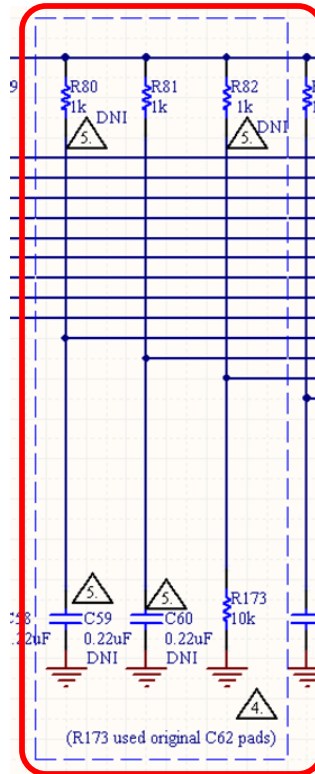
Reason

Spare components and traces were used to make a redundant telescope enable signal driving an in series transistor for increased safety.

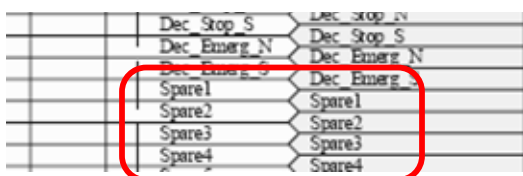
FROM: (PG 4)



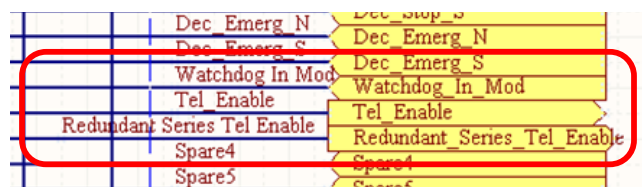
TO: (PG 4)



FROM: (PG 4)

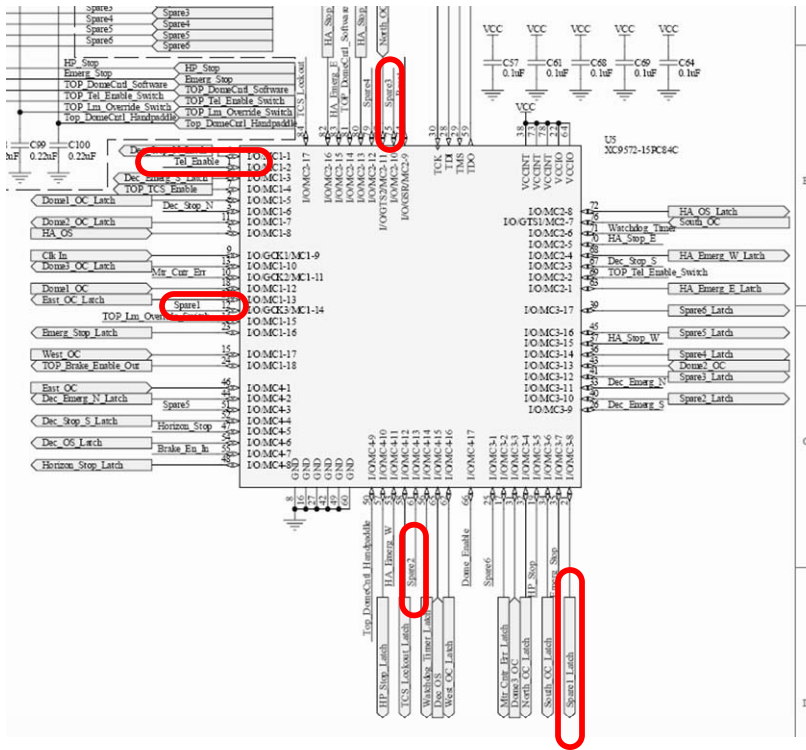


TO: (PG 4)

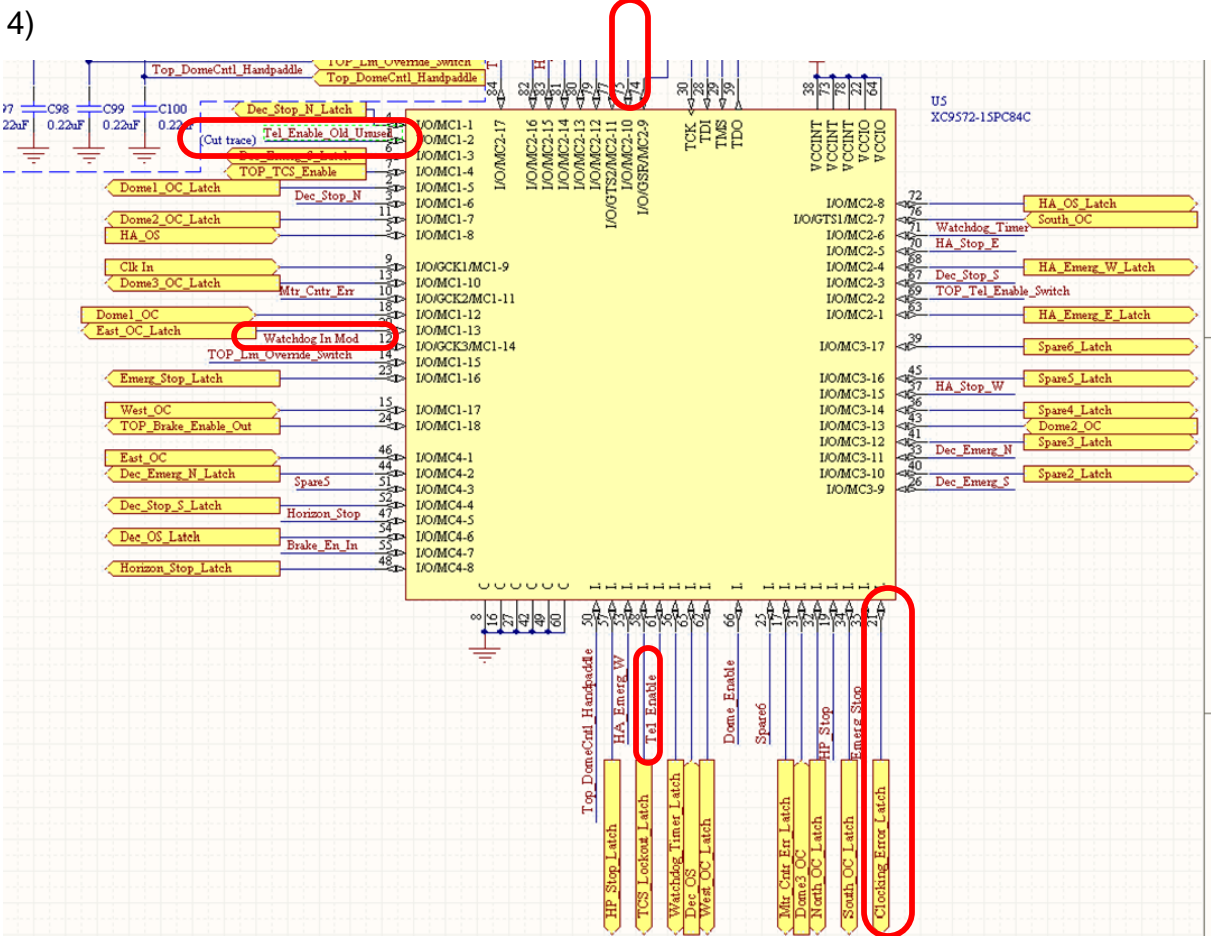


Description of Change (From – To). Include marked up prints, etc. where required (Continued):

FROM: (PG 4)

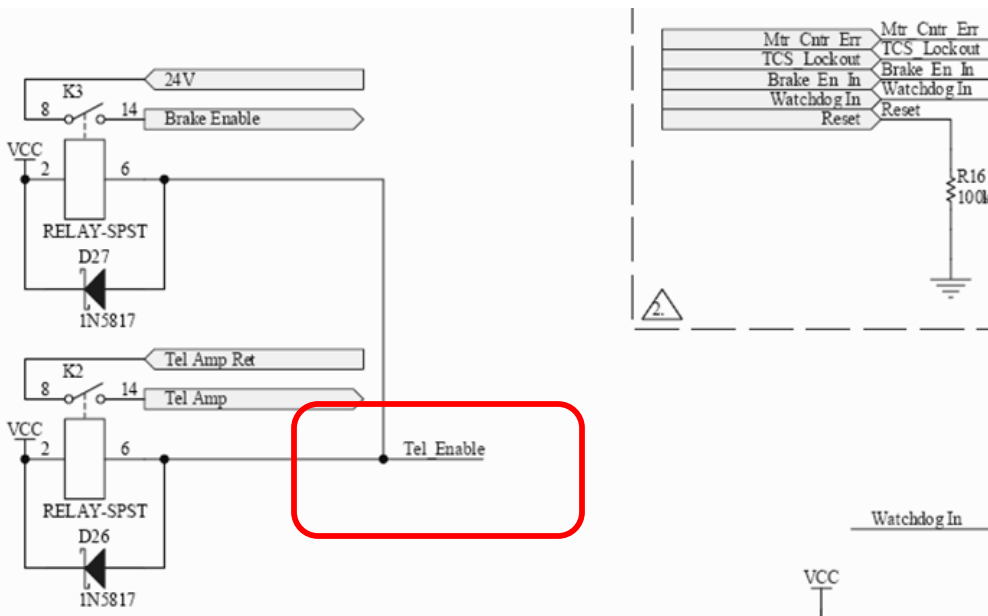


TO: (PG 4)

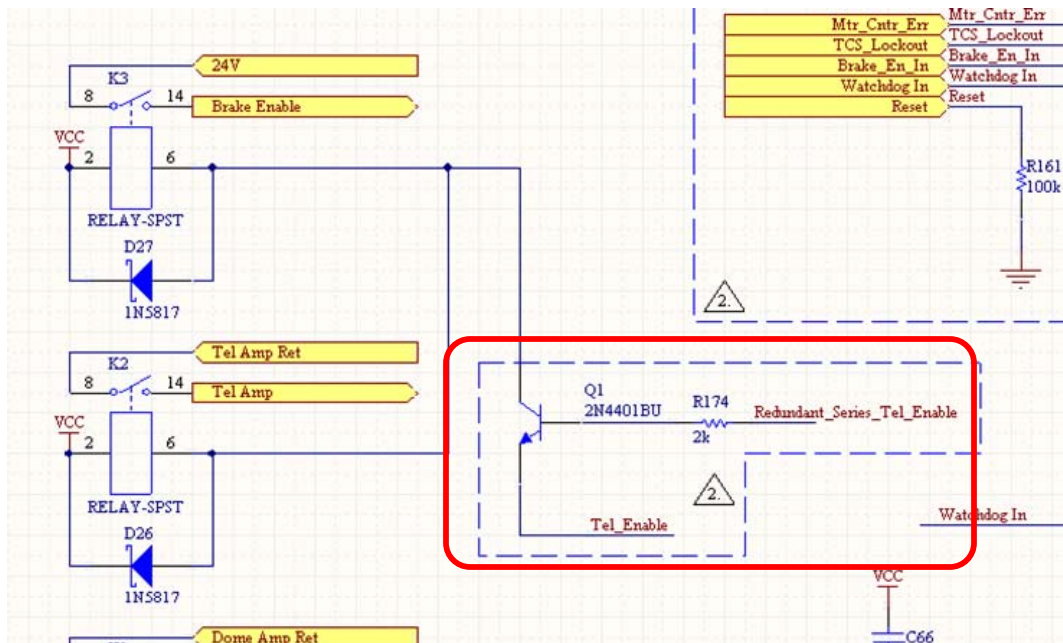


Description of Change (From – To). Include marked up prints, etc. where required (Continued):

FROM: (PG 4)



TO: (PG 4)





Description of Change (From – To). Include marked up prints, etc. where required (Continued):

FROM: (PG 1)

Watchdog_Timer_Latch		Watchdog Timer Latch	40
Spare1_Latch		Spare Latch Out 1	41
Spare2_Latch		Spare Latch Out 2	42
Spare3_Latch		Spare Latch Out 3	43
Spare4_Latch		Spare Latch Out 4	44
		Spare Latch Out 5	44

TO: (PG 1)

Watchdog_Timer_Latch		Watchdog Timer Latch	40
able_Clocking_Error_Latch		Clocking Error Latch	41
Spare2_Latch		Spare Latch Out 2	42
Spare3_Latch		Spare Latch Out 3	43

FROM: (PG 1)

42	TOP Lm Override Switch
43	HP Stop
44	Spare In 1
45	Spare In 2
46	Spare In 3
47	Spare In 4
48	Spare In 5
49	Spare In 6
50	

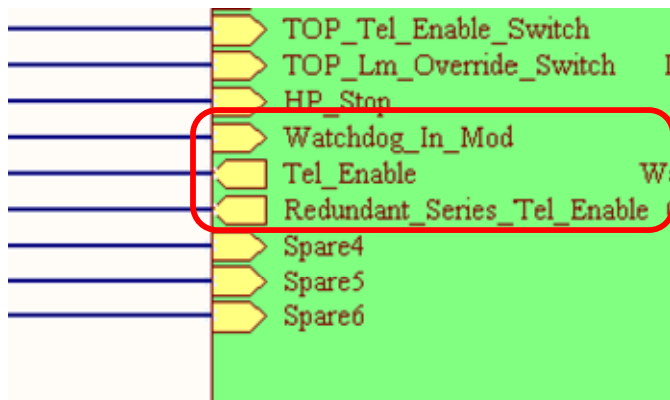
HEADER 25x2

TO: (PG 1)

43	TOP Lm Override Switch
44	HP Stop
45	Watchdog In Mod
46	Tel Enable
47	Redundant Series Tel Enable
48	Spare In 4
49	Spare In 5
50	Spare In 6

HEADER 25x2

FROM: (PG 1)



TO: (PG 1)

