Advanced LIGO Engineering Change Request (ECR)

ECR: Squeezer Modifications to the ISC DAQ	**DCC No: E1700220-v1**
	Date: 6/23/2017
Requester: Daniel Sigg **Impacted Subsystem(s):**	**ISC**

Description of Proposed Change(s): The following changes are required in the ISC DAQ:

ISC-C1/C4: D1001427-v18 to v19:
- Rack C1: Remove Tip-Tilt coil drivers (moved to sush456)
- Rack C1: Remove 1 ASC AA chassis
- Rack C1: Remove 1 ASC AI chassis
- Rack C1: Add 1 LSC AA chassis

ADC and DAC Channels: T1100472-v18 to v19:

- Removed IOT2R DC PD channels from ADC1 DB9_5.
- Added SQZ WFS in ADC1 DB9-5 to DB9_8.
- Moved ALS-C DC PD Mons from ADC3 DB9_7 to ADC 1 DB9_7.
- Moved AS_A/B_RF90 channels to end of ADC3.
- Add ASC-POP_B_RF45 into ADC3 DB9_3 and DB9_4.
- Renamed ASC-POP_X_RF36 into ASC-POP_A_RF45.
- Renamed ASC-POP_X_DC in ADC5 DB9_5 into ASC-POP_A_DC.
- Renamed ASC-AS_D_DC (spare) in ADC5 DB9_5 into ASC-POP_B_DC.
- Removed ADC5 DB9_7/8 (TT).
- In ADC6 DB9_1/2: Added placeholder for JAC-QPD_A/B.
- Removed ADC7 altogether (TT).
- Removed DAC0 altogether (TT).
- Renamed DAC1 into DAC0 and added DuoTone.
- Removed TT from new DAC0 DB9_1/2.
- Added bull's eye detector in ADC5 DB9_7   **ASC**

- Moved OMC drives from DAC0 DB9_1 to DB9_4.
- Added SQZ extra in DAC0 DB9_1.
- Added SQZ SERVO_EXC in DAC0 DB9_2.
- Added ADC3 with SQZ channels.
- Changed ISCT6 generic PD interface to new channels from the squeezer.
- Added SQZT6 generic PD interface into ADC0 DB9_8 chns 29-30 (2chn only).
- Added SQZ CLF_REFL into ADC0 DB9_5 chns 19-20 (shared with OMC PZTs, requires Y-cable).
- Replaced ASAIR channels in ADC1 DB9_3 and DB9_4 with SQZ HD/OMC/SHG/OPO.
- Added ADC3 with all SQZ channels   **LSC**

Whitening Chassis Channels: E1300079-v7 to v8:
- Added 5th BIO in corner
- Added SQZ WFS_A/B whitening
Whitening Chassis Channels: E1300079-v8 to v9:
- Added ASC POP_B (in-vac WFS)
- Added PSL BES_A (PSL bull's eye)
- Marked LSC ASAIR for removal
- Added SQZ DC PDs
- Added IMC REFL_A RF

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Reason for Change(s): Squeezer upgrade. The ISC is sharing the data acquisition system with the squeezer. This requires ECR E1700122, which moves the tip-tilt channels into sush56.

Estimated Cost: No additional costs, included in the squeezer budget.

Schedule Impact Estimate: approximate 2 days (after O2).

Nature of Change (check all that apply):
- ☐ Hardware Safety
- ☐ Correct Hardware
- ☐ Correct Documentation
- ☒ Improve Hardware
- ☐ Improve/Clarify Documentation
- ☐ Change Interface
- ☐ Change Requirement

Importance:
- ☐ Desirable for ease of use, diagnostics
- ☐ Desirable for improved performance, reliability
- ☒ Essential for performance, reliability
- ☐ Essential for function
- ☐ Essential for hardware safety

Urgency:
- ☐ No urgency
- ☒ Desirable by date/event: After O2
- ☐ Essential by date/event: _____
- ☐ Immediately

Impacted Hardware (select all that apply):
- ☐ Repair/Modify. List part & SNs: _____
- ☐ Scrap & Replace. List part & SNs:_____
- ☐ Installed units? List IFO, part & SNs: _____
- ☐ Future units to be built

Impacted Documentation (list all dwgs, design reports, test reports, specifications, etc.):

D1001427, T1100472, E1300079

Disposition of the proposed change(s):

The disposition of this proposed engineering change request is to be completed by Systems Engineering and indicated in the "Notes and Changes" metadata field in the DCC entry for this ECR. The typical dispositions are as follows:

- **Additional Information Required**: in which case the additional information requested is defined. The ECR requester then re-submits the ECR with the new information using the same DCC number for the ECR but with the next version number.
- **Rejected**: in which case the reason(s) for the rejection are to be given
- **Approved**
- **Approved with Caveat(s)**: in which case the caveat(s) are listed
- **TRB**: the ECR is referred to an ad-hoc Technical Review Board for further evaluation and recommendation. It is the System Engineer's (or designee's) responsibility to organize the TRB. The System Engineer (or designee) then makes a technical decision based on the TRB's recommendation. Links to the TRB's documentation (charge, memos, final report, etc.) are to be added to the "Related Documents" field for this ECR.
- **CCB**: a change request for approval of additional funds or schedule impact is to be submitted to the Configuration Control Board. Links to the CCB's documentation (CR, etc.) are to be added to the "Related Documents" field for this ECR.