Status of Opto-Board Installation

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Introduction

- 3 opto-board flavors
  - nSQP D opto-board (disk, L1, L2): 7 TTC + 14 data links
  - nSQP B opto-board (B-layer): 7 TTC + 14 data links
  - IBL opto-board: 8 TTC + 16 data links
Production Statistics

- **Total fabricated:** 421
  - **Good:** 393 (1\textsuperscript{st} class: 383, 2\textsuperscript{nd} class: 10)
  - **Bad:** 28
nSQP Opto-Boards Installation

- Installation + electrical and optical connectivity tests successfully completed in middle of April
  - awaiting cooling for additional tests
- Installation process very smooth and straightforward
  - opto-board/opto-box/ER bundle/fibers fit together well

![Image of nSQP Opto-Boards installation](image_url)

- Cooling rail
Problems Encountered

- three opto-boards were replaced during installation:
  - One opto-board/module had flaky configuration
    - problem fixed after replacing the opto-board
    - problem not reproducible in opto-board reception test system
  - One opto-board/PP0 with flaky VVDC/module power crosstalk
    - problem fixed after replacing the opto-board and plugging/unplugging the ER bundle
    - problem not reproducible in opto-board reception test system
  - One opto-board connector broken during cooling line installation
    - replaced
IBL Opto-Boards Installation

- Current plan calls for IBL opto-boards installation in 1-2 weeks
Accelerated Lifetime Test

● Industry standard: opto-boards should survive for 1,000 hours at 85°C/85% relative humidity

● Started the test on two IBL boards
  ◆ No failure seen up to 672 hours

● D and B boards will be added soon

● After 2,000 hours, repeat the test on new boards at 50/50 for months
Summary

- Opto-boards production completed and delivered
- nSQP opto-boards successfully installed
- IBL opto-boards will be installed soon
- Long-term reliability study in progress