

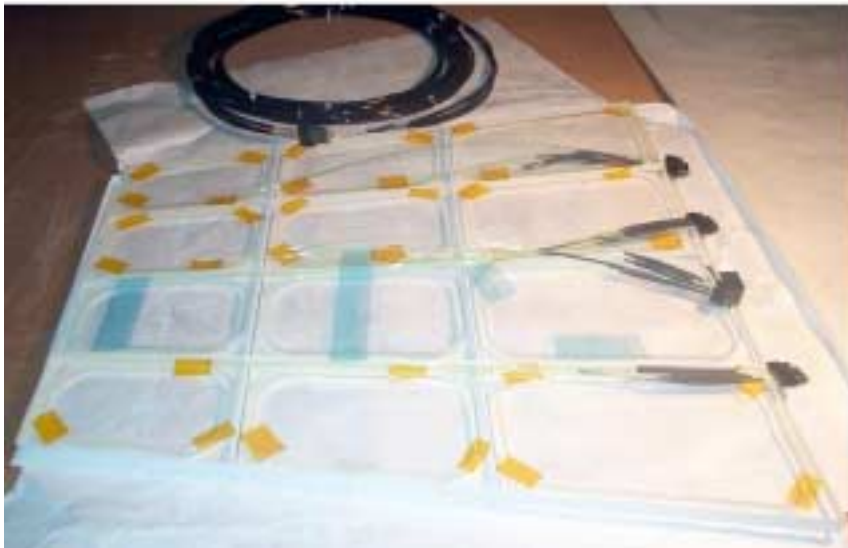
The Intercryostat Detector (ICD)

Status and Future Work
November 14, 2001

ICD Components

- ❑ Scintillator tiles, each subdivided into 12 readout channels ($31.5 \times 12 = 378$)
- ❑ Light collected in WLS fibers, 3/channel
- ❑ Transmission of light along 5m clear fiber cables to remote electronics
- ❑ Fiber backplane provides interface to PMT's

Scintillator Tiles

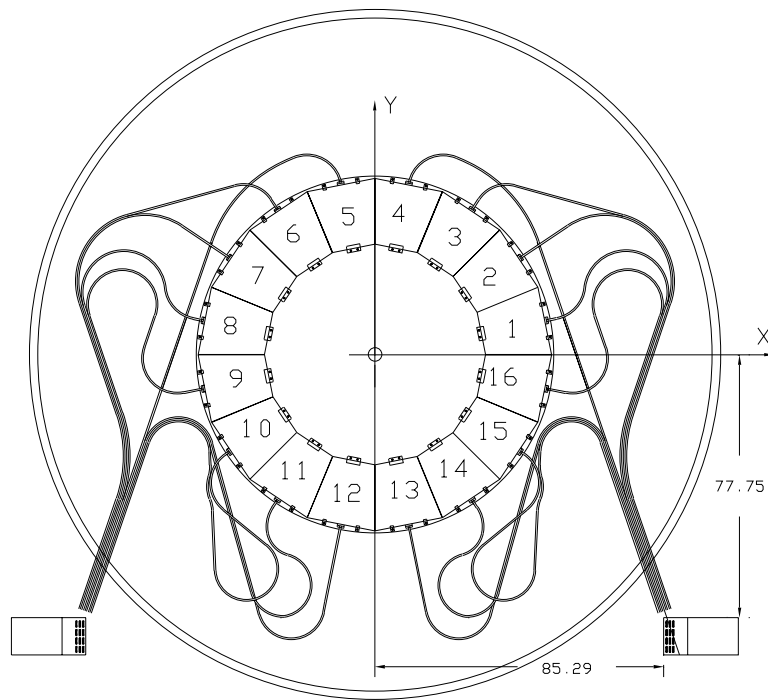


ICD tile and optical fibers
during assembly



ICD tile array on the DØ
south endcap calorimeter

Scintillator Tiles (cont.)



Tiles / fiber cables / backplanes

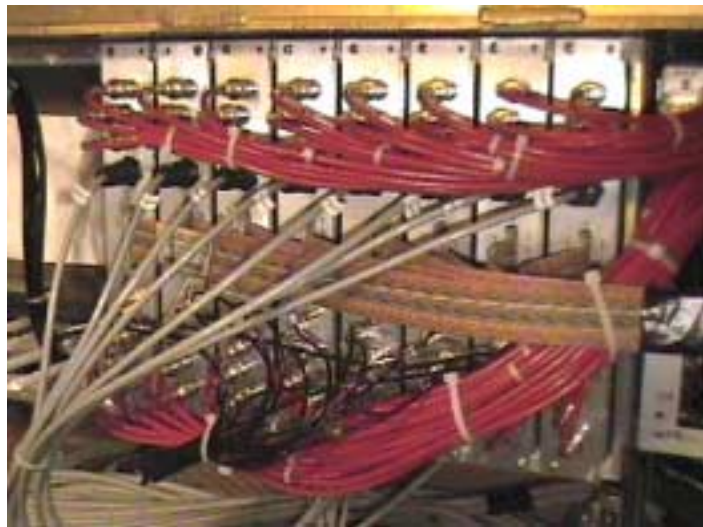


Installed on the DØ
ECS cryostat

Fiber Backplane / Electronics

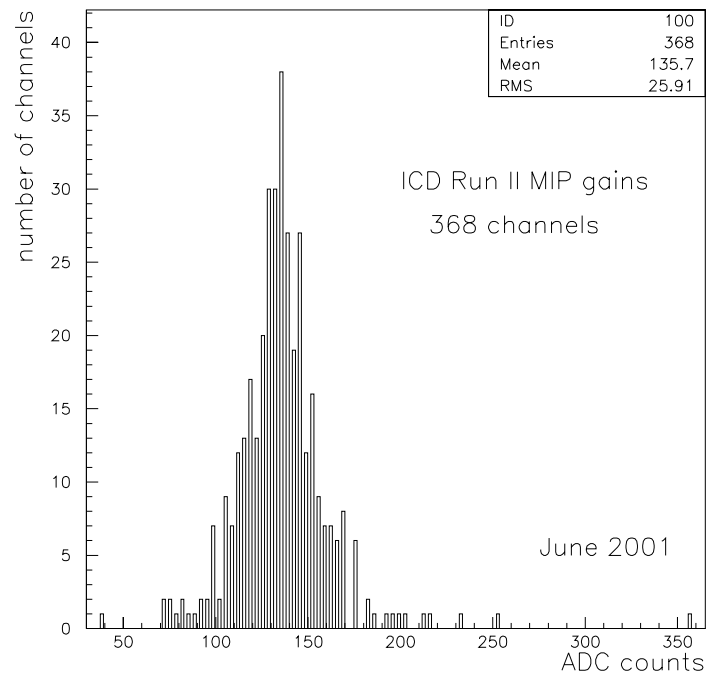
- ❑ Light distributed to individual PMT's via the backplane – also houses the LED system for monitoring gains/stability
- ❑ Iron blocks shield PMT's from residual magnetic field (~300 gauss)
- ❑ Electronics drawers contain motherboards, PMT bases, & preamplifiers (LA Tech)

Fiber Backplane / Electronics (cont.)



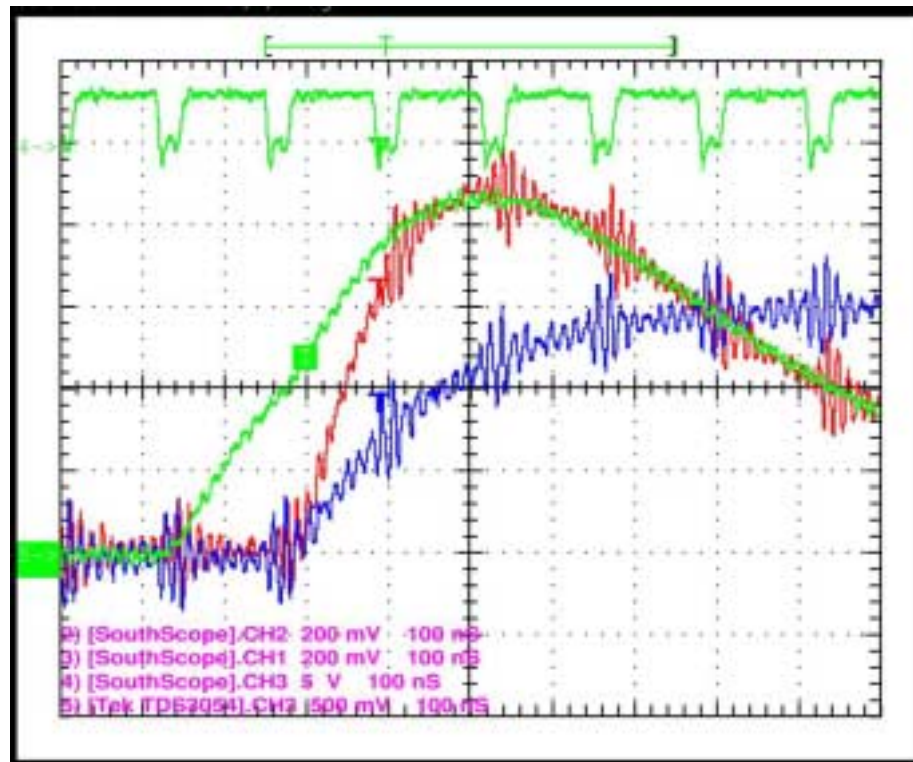
Calibration

- ❑ Primary goal: achieve good uniformity of response (dynamic range, inclusion in the Level 1 trigger)
- ❑ PMT's characterized at UTA using an LED-based system – determine gains and set operating voltages
- ❑ All tile/drawer/PMT units tested on a cosmic ray test stand at DØ



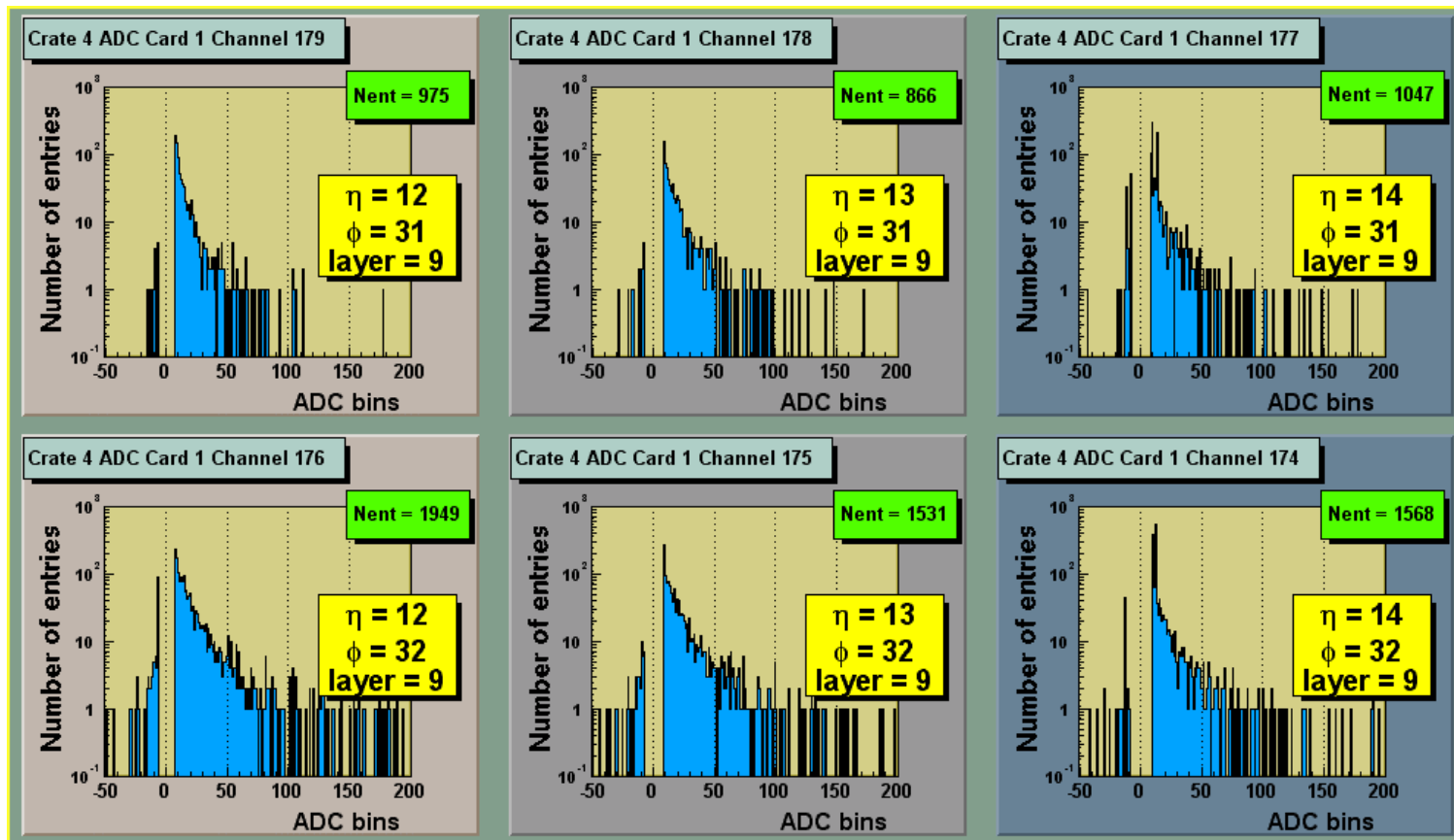
Timing of ICD Signals w.r.t. DØ Calorimeter Readout

- The arrival of ICD signals relative to the calorimeter electronics readout was studied – more stringent requirements compared to Run I:

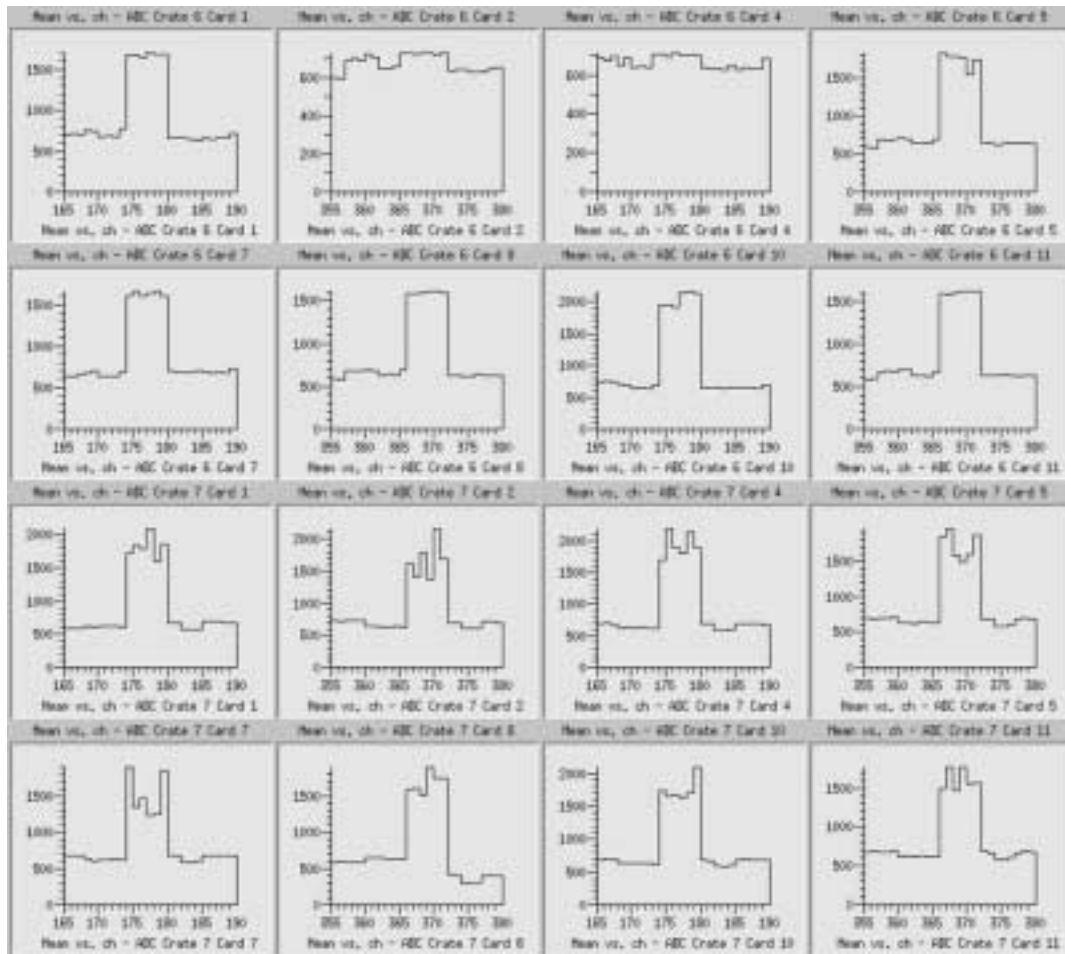


Initial Results

□ It's working...



Initial Results (cont.)



What's Next??

- ❑ Second half (north end) of ICD electronics recently installed – first opportunity to readout full system once Tevatron resumes operation
- ❑ Additional calibration studies a priority:
 - ➔ Use collider data to refine cosmic ray test results
 - ➔ Incorporate LED runs into standard detector shifts

Summary / Conclusions

- ❑ ICD fully instrumented during current shutdown at FNAL – ready for resumption of collider running later this month
- ❑ Once a final set of calibration constants are determined, LED monitoring will be used to track PMT gains
- ❑ Successful installation of the Run II ICD represents a huge amount of work by many people – THANKS TO ALL!