# DAQ Update - CM43

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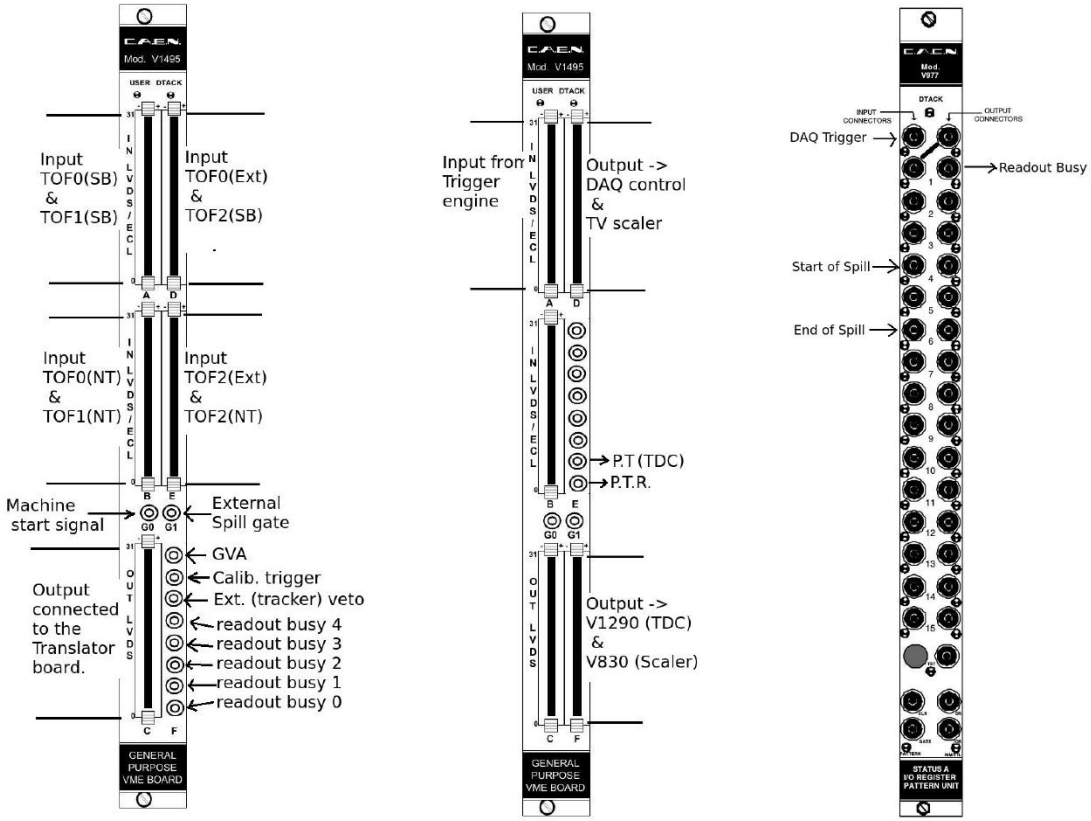
# Trigger

- The trigger was routinely operated during the last three user cycles.
- No issues were found.
- Big step forward comparing to the previous situation when the trigger was the most fragile component of the DAQ system.

# Documentation of the Trigger system is completed.

## Cabeling scheme

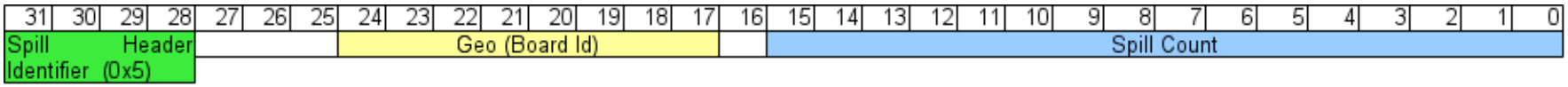



Left: Trigger engine board connection scheme. Middle: Translator board connection scheme. Right: I/O connection scheme.

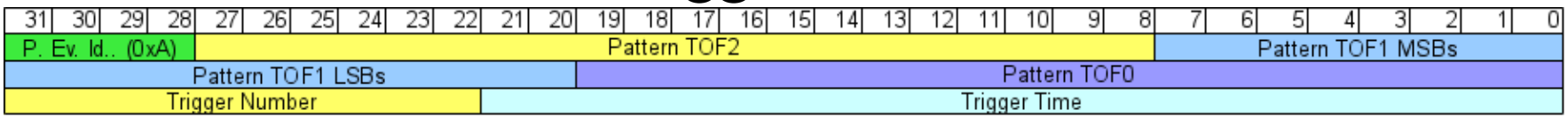
# Documentation of the Trigger system

## Structure of the Event readout buffer

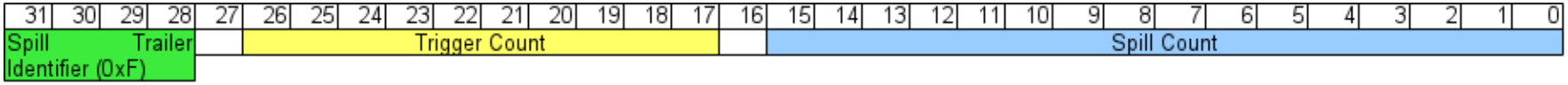
### Spill Header




### Trigger Event




### Spill Trailer



# Documentation of the Trigger system

## The WME address map:

| Register name | Address | Addr. size | Data size | Read/Write |
|---|---|---|---|---|
| Event readout buffer | base + 0x0000-0FFC | A32 | D32 | R, BLT |
| Module reset* | base + 0x800A | A32 | D32 | W |
| GEO* | base + 0x102C | A32 | D32 | R/W |
| Status | base + 0x1030 | A32 | D32 | R |
| User firmware version* | base + 0x1008 | A32 | D32 | R |
| Number of triggers | base + 0x1034 | A32 | D32 | R |
| Number of data words | base + 0x1038 | A32 | D32 | R |
| Number of spills | base + 0x103C | A32 | D32 | R |
| Software cycle start | base + 0x1040 | A32 | D32 | R |
| Busy times 0,1 | base + 0x1060 | A32 | D32 | R |
| Busy times 2,3 | base + 0x1064 | A32 | D32 | R |
| Busy times 4,5 | base + 0x1068 | A32 | D32 | R |
| Part. Tr. veto lenght | base + 0x100C | A32 | D32 | R/W |
| Spill Gate open delay | base + 0x1010 | A32 | D32 | R/W |
| Spill Gate Clese delay | base + 0x1014 | A32 | D32 | R/W |
| Spill Gate Gen. Ctrl | base + 0x1018 | A32 | D32 | R/W |
| Part. Tr. Gen. Ctrl | base + 0x1028 | A32 | D32 | R/W |
| TOF0 Mask | base + 0x101C | A32 | D32 | R/W |
| TOF1 Mask | base + 0x1020 | A32 | D32 | R/W |
| TOF2 Mask | base + 0x1024 | A32 | D32 | R/W |

* This register is available also for the Translator board.

Table 1: Address Map

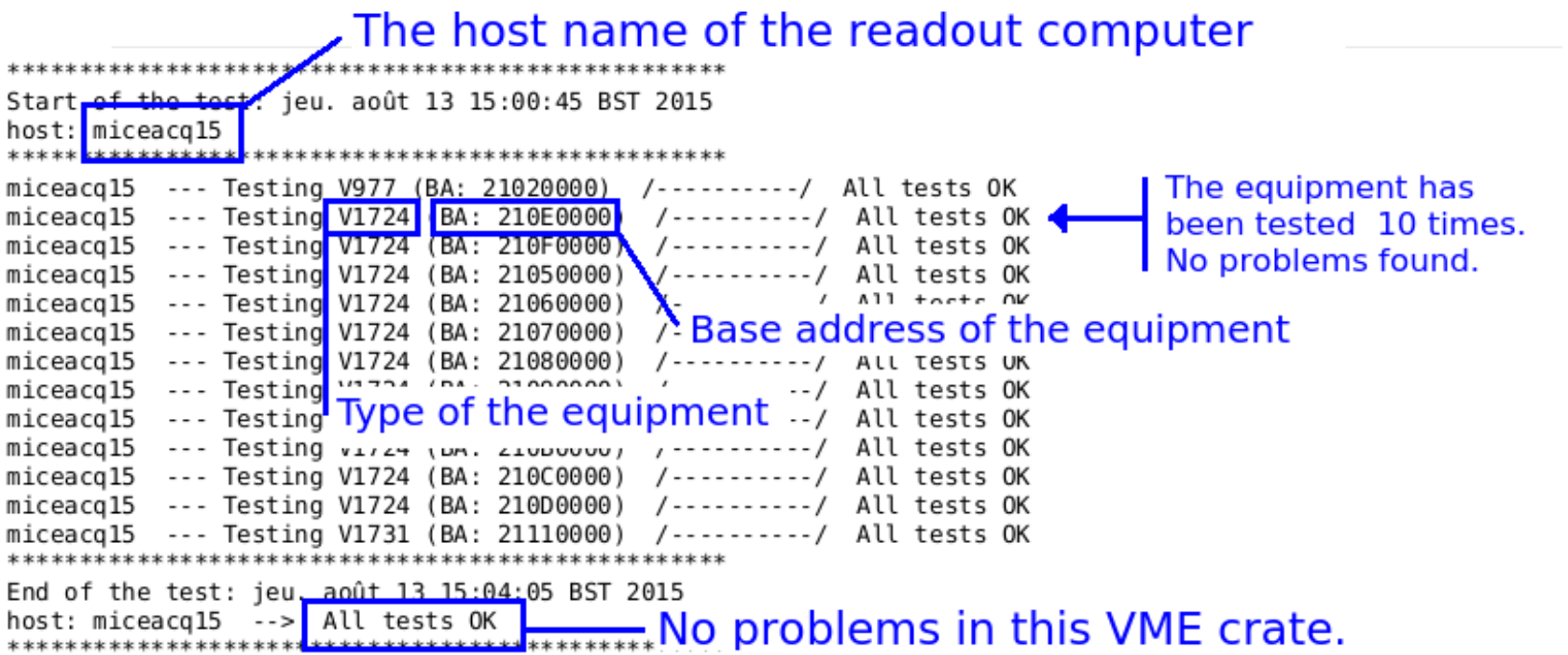
# Documentation of the Trigger system

The whole document is available at
http://micewww.pp.rl.ac.uk/projects/online/wiki/DAQUserManuals

# Automated checks of the datataking readiness

- A system of shell scripts for automated tests is under development.
- The system provides an early detection and diagnostics of the possible problems occurring during the shutdown periods.

Typical output of the tests on miceacq15. All tests OK case:



# Automated checks of the datataking readiness

Printouts of the tests in different cases of equipment failures

```
miceacq15  --- Testing V1724 (BA: 210E0000)  /-----x----/  1 test FAILED
```

The equipment has been tested 10 times.
One of the tests has failed.

A case of a single failure. Does not necessarily indicate a real problem.

```
miceacq15  --- Testing V1724 (BA: 210E0000)  /xxxxxxxxxx/  10 tests FAILED
```

The equipment has been tested 10 times.
All tests have failed.

A case of a massive failure. Definitely shows a problem.

# Documentation

When the test system is active, the tests can be executed on a daily basis and the results will be send to a list of authorised persons by email.
Currently the VLSBs are not covered by the tests.

The whole Documentation of the datataking readiness tests is available at
http://micewww.pp.rl.ac.uk/projects/operations/wiki/DAQ

# Short term plans and Conclusion

- Implement a more sophisticated and robust system for software version control that will include a development branch and an official release..
- Develop a procedure for rolling back to a stable version of the readout code in case of emergency.

The DAQ system is in a good shape and is ready for Step IV.