

NSA Corrective Maintenance Reporting: A Status Report

Chris Waigl¹, Martin Stuefer¹, Brad Perkins², Mark Ivey³, Jeffrey Zirzow³, Walter Brower⁴, James Ivanoff⁴, Cory Stuart⁵

Abstract

The ARM North Slope of Alaska (NSA) Site Operations team has deployed a new corrective maintenance reporting (CMR) database. The quality, completeness, and number of corrective maintenance reports has significantly increased at the ARM NSA facilities of Barrow, Atkasuk, and Oliktok. The application was built using standard open-source components and a flexible and easy-to-manage data model with a view towards generalization to other ARM sites and interoperability with other program-wide reporting tools (OSS, DQPR, DQPR, weekly reports, IMMS).

The new database is well accepted. Feedback from operators and other members of the ARM community has been decisive in considering trade-offs such as between the level of detail collected and the complexity of the task of filling in a CM reporting form. Characteristic features are improved reporting and editing capabilities. Operational tasks such as weekly status reporting or the linking of DQPR and OSS entries back to maintenance reports, have become noticeably easier. The distinction between optional, configurable, and required data fields facilitates the extension of the database system to other facilities in ARM.

Compatibility and extensibility

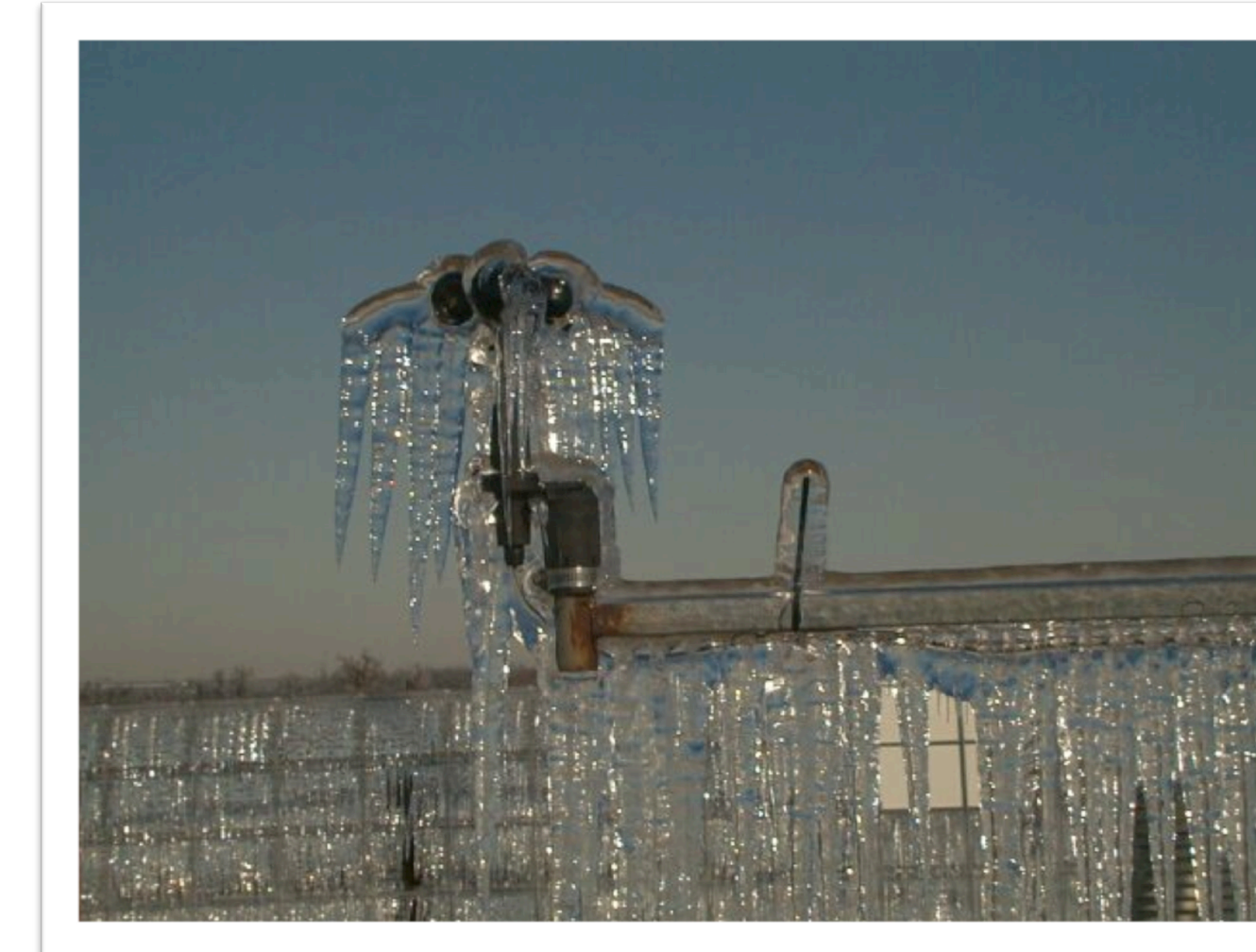
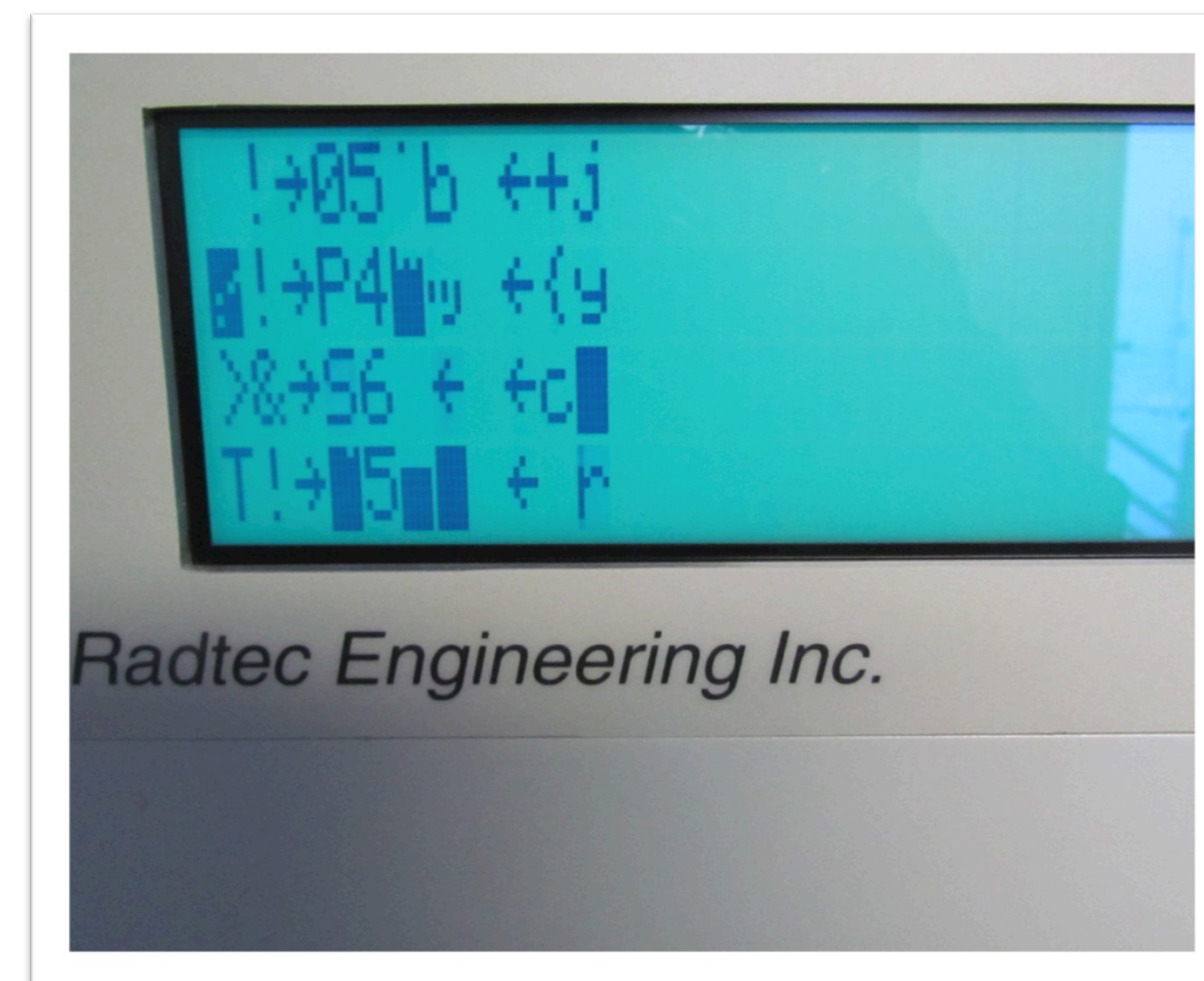
Within NSA:

- Integrate a per-instrument status dashboard populated automatically from new CM Reports, and generate the weekly operational status report from it
- Extend effort to PM (Daily Rounds) database

ARM-wide (ECO-866) - goals and requirements

- Give freedom to individual sites to adapt collected information and visual display to their own site's needs and test user acceptance
- *Fixed* (instrument, report date) vs *configurable* (follow-up action) vs *optional* (root cause) data fields – only the first type common to all ARM sites and requires detailed coordination
- Add completely offline version using HTML5 local storage (iPad and laptop compatible, synchronize from base station)
- Develop HTTP APIs to automatically exchange CMs, DQPRs etc.
- Use central user authentication (ARM single sign-on)

¹: Geophysical Institute, University of Alaska Fairbanks (UAF)
²: Sandia National Laboratories
³: Los Alamos National Laboratory
⁴: Ukpēagvik Iñupiat Corporation (UIC) Science Division
⁵: Argonne National Laboratory



Old vs new CM reporting system

NSA ACRF ARM CORRECTIVE MAINTENANCE REPORT
cm_record_ID 9273

Text of this record Start a new search Go to main CM +
Go to list

Report Date: 3/12/2011
Operator: Martin Stuefer
Date/Time on site: GMT
Location: Barrow
Instrument/System: TOWER CAM
Outage Date: 3/03/2011 Time of Outage: 20:05:01 GMT
Return To Service Date: Time: GMT
Problem Fixed? No

Description of Problem:
The camera image collection was interrupted. The camera was checked to be working, images are received and saved at UAF/Nanuna. Walter reported that some adapter was removed from a server, which might have stopped the image data transfer to the collector.

Troubleshooting/Corrective Action Performed:

Time you spent on problem: Hours/Minutes
Suspected Root Cause:
Component:

IMPORTANT: If you are filling out this record for the first time via the web, click "submit" at left.

choose from list or enter "Other" and email Martin in order to be added.

Navigating records
Go to prev's Go to next
Go to last record
Go to last 5 records

If the computer you are working from has email, click here to Email the CM (can be done at any time, after submit). The email will go to nsasops list. You must enable popups from this site.

Current production system

- Full go-live on Nov 1, 2011 – concludes ECO-857
- 165 CM Reports for NSA C1 Barrow have been collected
- Email widely used to refer to reports
- Two synchronized live instances: at University of Alaska and at NSA C1 Barrow, plus a public test system
- 2400 legacy CM reports to be imported
- Multiple feature and several bug fix requests

- Improved readability and simplified layout, autocomplete features
- Automatic login redirect (smooth workflow) to target page
- Good performance, even over satellite internet, with local fallback
- Easy modifications of instrument, component, operator lists through the admin backend, much faster than with FileMaker New and clearer email notification format
- SSL redirection, local instance behind NSA firewall (SAS required)
- Passwords are saved as salted hashes
- Guest access for report viewing and download
- Two formats for filtering result display: report listing or report summary
- Persistent, unique URLs and IDs, with a report identified uniquely from originating domain (UA, C1, X [legacy]) and numeric ID:

CM-2011-NSA-UA-1093
CM-[YEAR]-[SITE]-[DOMAIN]-ID
<https://nanuna.gi.alaska.edu/cm/CM-2011-NSA-UA-1093/>



Welcome Chris Waigl. You can [log out](#) or carry out [administrative tasks](#).

Corrective Maintenance Report

This Corrective Maintenance Reporting system serves to report and display information about corrective maintenance carried out on the ARM NSA climate research facilities.

[New CM Report](#) [List CM Reports](#) [Show CM Report](#)

You are editing CM-2011-NSA-UA-1106. Email notifications will not be re-sent.

Operator: Walter Brower (wbrower) Location: Barrow
Instrument: TPS Component: TOWER CAM
Issue started... (GMT/UTC): 2011-12-26 18:30:00
Maintenance ended... (GMT/UTC): 2012-03-09 12:05:00
Description of the issue: No communication with computer, no data received.
Corrective steps or troubleshooting action: Inspect and take pictures of enclosure. Remove ice. Check all have power.
Is the system now operational? Unknown Suspected root cause: h
Follow-up action items:
 Request collection/ingest to be disabled
 Request collection/ingest to be enabled
 Send email to distribution list
 Treat this report as an ongoing or longstanding problem

Submit