International Earth Science Constellation Mission Operations Working Group
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Constellation Coordination System (CCS) Status
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Agenda

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CCS Purpose and Goals

• System for coordinating and monitoring Constellation safety of the Earth Sciences Constellation (ESC) missions and is a central source of data sharing and operational planning.
  – Primary tool for monitoring the Constellation configurations
  – Enables information exchange among/between domestic and international partner ESC missions, including access to nominal predicted mission ephemerides
  – Transfer critical product data between the Mission Operation Centers (MOCs), CARA, and other authorized mission users
  – Mission Analysis tools and automated health and safety monitoring
    • Automated constellation safety warning notifications
    • Graphical visualization of orbital data

• The latest release, CCS 7.3, was deployed to operations on January 31, 2017.
CCS 7.3 Review

- CCS Tools, excluding the Satellite Situational Awareness tool, provide the capability for users to upload any ephemeris or NORAD TLE in a CCS-supported format as an input to the tool.
- User uploaded files can be associated with a “user-defined” mission, or with an existing CCS mission.
- New control box visualization on the Home Page emphasizing phasing separation and relation of missions to their control box.
CCS 2017.1 - Overview

• **Analyses Consolidation and Improvements**
  – Implement pagination for the product selector to reduce the time for Tools pages to initially load.
  – Combine the Close Approach and Constellation Close Approach analyses into a single unified analysis with enhanced capabilities.
  – Combine the Ad Hoc Reports and Ad Hoc XY Plots mission plans in the Ad Hoc analysis.

• **User Interface and User Experience Consistency**
  – Add measurement units to the Mission Definition page for Mass, Drag Area, and SRP Area parameters.
  – Specify the output ephemeris type when more than one ephemeris input type is selected in Merge Rules.
  – Modify buttons, labels, warnings, and data values across the CCS site to enable a consistent ‘look and feel’.
CCS 2017.1 - Overview

• **Database Enhancements**
  – Migrate product files from database storage to file storage.
  – Migrate configuration items in the CCS codebase to the database.

• **Security Improvements**
  – Enable two-factor authentication on all CCS accounts to comply with ESMO security requirements.
  – Reduced session timeout period to two hours.
  – Mitigate known security threats including customized error pages, disabling non-required system capabilities, secure data transfer, and encryption of sensitive information.
  – Send communications from CCS via NASA mail servers using official nasa.gov email addresses.

• **Site Analytics**
  – Addition of government required metadata and analytics.
CCS 2017.1 - Schedule

• CCS 2017.1 is currently undergoing Factory Acceptance Testing (FAT).

• The remaining schedule is:
  – Site Test Readiness Review: June 16, 2017
  – Site Acceptance Testing: June 19, 2017 - June 30, 2017
  – Operational Readiness Review: July 6, 2017
  – Deployment to Operations: July 17, 2017 – July 19, 2017
CCS 2017.1 - Two-Factor Authentication

• Starting with the deployment of CCS 2017.1, in order to meet security requirements, two-factor authentication will be required during the login process.

• Upon first login, users will be prompted to enroll in two-factor authentication. Any password manager may be utilized including Google Authenticator, 1Password, Authy, etc…

• Ten one-use backup codes will also be provided in case access to the password manager is lost. Keep these in a secure location!

• Demo
**CCS 2017.1 - Close Approach Analysis**

- Close Approach analysis and Constellation Close Approach analysis have been merged into a single analysis in CCS 2017.1.

- The updated Close Approach analysis provides three primary capabilities:
  - Calculation and reporting of Time of Closest Approach (TCA) for the analysis span regardless of step size.
  - Implementation of customizable Zone of Exclusions (ZoE) for violation reporting including customizable ZoE shapes (sphere, ellipsoid, and boxoid).
  - Calculation and reporting of exact violation spans, including minimum range, within the analysis span regardless of step size.

- Demo
Future of CCS - Analytics

- From 01-Feb to 31-May, there were 43 unique visitors to the CCS operational web site.
  - 61% of the total visits only accessed the Home Page.
  - 25% of the total visits utilized a CCS Tool.
  - 551 products were downloaded by 22 unique users.
  - Of 111 registered users, 22 have a total of 131 active subscriptions.
Future of CCS – Feedback / Discussion

• What ideas or suggestions do you have?
• What are the capabilities you find most useful currently?
• What would make CCS more useful for you?
• Would additional training and/or outreach be beneficial to you?
• Thank you for your continued support!

• For all CCS communications please contact:
  ccs-support@lists.hq.nasa.gov