# Cruise Data Management Application - Technical Documentation

## Overview:

The Cruise Data Management Application (CRDMA) was developed to allow all PIFSC users to view and download summary and detailed reports for PIFSC cruise operations. The CRDMA allows authorized users to manage cruise information and to view/annotate cruise data validation issues identified by QC queries.

## Resources:

* Version Control Information:
  + URL: [git@pichub.pifsc.gov:centralized-data-tools/centralized-ctd.git](mailto:git@pichub.pifsc.gov:centralized-data-tools/centralized-ctd.git) in the application\_code/APEX folder
  + Application: 0.1 (Git tag: cruise\_web\_app\_v0.1)
* [CTD Data Management Application - End User Documentation.docx](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-ctd\CDMA\docs\CTD%20Data%20Management%20Application%20-%20End%20User%20Documentation.docx)
* [CTD Data Management Application - Testing Documentation.docx](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-ctd\CDMA\docs\CTD%20Data%20Management%20Application%20-%20Testing%20Documentation.docx)
* [Database Documentation](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-cruise-database\docs\Centralized%20Cruise%20Database%20-%20Technical%20Documentation.docx)

## Application URLs:

* Development Application: <https://midd.pic.gov/apex_picd/f?p=287>
* Test Application: <https://midt.pic.gov/apex_pict/f?p=140>
* Production Application: <https://mid1.pic.gov/apex_pic/f?p=140>

## Requirements:

* A connection to the PIFSC network is required to access the application
* Google Chrome or Firefox must be used to access the application in order to avoid PIFSC SSL certificate issues
* APEX 5.1 must be installed on the given APEX instance

Features:

* Installed Modules (see [Database Documentation](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-cruise-database\docs\Centralized%20Cruise%20Database%20-%20Technical%20Documentation.docx) for more information):

Data Flow:

* [Data Flow Diagram (DFD)](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-cruise-database\docs\DFD\Centralized%20Cruise%20DFD.pdf)
* [DFD Documentation](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-cruise-database\docs\DFD\Centralized%20Cruise%20Data%20Flow%20Diagram%20Documentation.docx)

## Business Rules:

* The business rules for the CDMA are defined in the [Business Rule Documentation](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-ctd\docs\Business%20Rule%20Documentation.docx) and each specific business rule listed in the [Business Rule List](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-ctd\docs\Business%20Rule%20List.xlsx) with a Scope of "CDMA" apply to this module and each rule with a Scope of "CTD DB" apply to the underlying database

## Configuring/Installing the CRDMA Application:

* [How to Configure the Application](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-cruise-database\CRDMA\docs\Cruise%20Data%20Management%20Application%20-%20How%20To%20Configure%20Application.docx)
* How to Install the Application:
  + Login to the APEX application builder and click the **Import** link.
  + Click the **Choose File** button and then navigate to the [f287.sql](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-cruise-database\CRDMA\application_code\f287.sql) file and click **Open**.
  + Click **Next**
  + Click **Next**
  + Choose **Change Application ID** and specify the application ID for the application
  + Click the **Install Application** button

## Application Page Numbering Policy:

* Public Pages: 0 - 199
* Data Administrator Pages: 200 - 399
* Participant Pages: 400 - 499
* ITS Pages: 500 - 599

## Application Pages:

* Public Pages (reporting pages - able to navigate to different cruises and view/download information):
  + (Page ID: 1) Cruise Summary Full Summary
    - Chart report of the number of cruises, cruise legs, and days at sea for all fiscal years (clickable, forwards to Fiscal Year Summary page)
    - Chart report of the number of cruises, cruise legs, and days at sea for all survey names (clickable, forwards to Survey Name Summary page)
  + (Page ID: 10) Fiscal Year Summary
    - Select field to choose a given fiscal year based on the data in the database
    - Chart report of the number of cruises, cruise legs, and days at sea for the selected fiscal year
    - 3 Chart reports for the selected fiscal year display the number of cruises, cruise legs, and days at sea respectively grouped by Survey Name
  + (Page ID: 20) Survey Name Summary
    - Select field to choose a given Survey Name based on the data in the database
    - Chart report of the number of cruises, cruise legs, and days at sea for the selected Survey Name
    - 3 Chart reports for the selected fiscal year display the number of cruises, cruise legs, and days at sea respectively grouped by fiscal year
* Data Administrator Pages (Data management pages)
  + (Page ID: 210) Cruise List
    - Interactive report that shows all research cruises with some aggregate information like start/end dates, days at sea, and associated cruise legs
    - Authorized users can create a new cruise by clicking the Create button which will forward them to the View/Edit Cruise page with no cruise selected.
    - Authorized users can view or edit a given cruise by clicking the Edit icon next to the cruise's table row which will forward them to the View/Edit Cruise page with the corresponding cruise selected.
    - Standard interactive report tooltips are available for all columns included in the report
  + (Page ID: 220) View/Edit Cruise
    - The page accepts one parameter, a Cruise ID. If no Cruise ID is specified (click the Create button on Cruise List page) an authorized user is allowed to create a new cruise record. The data form will allow the new cruise information to be specified
      * Clicking on the "Create" button will save the record and reload the page with the new cruise selected allowing the user to create records (e.g. cruise legs, target species, etc.) associated with the new cruise
      * Clicking on the "Create Another" button will save the record and reload the page with no cruise selected to allow the user to create another cruise record.
    - If a Cruise ID is specified (click the Edit icon on Cruise List page) an authorized user can edit the selected cruise record and all associated records.
      * Clicking on the "Delete" button will prompt the user to confirm if they want to delete the selected cruise record. Clicking the "OK" button will attempt to delete the record but it will fail unless there are no records that reference the specified Cruise record, if it is successful the user is forwarded to the Cruise List page. Clicking the "Cancel" button will cancel the delete action.
      * Clicking on the "Apply Changes" button will attempt to save the record and reload the page
      * Associated Records:
        + Cruise Legs:

The user can create a new cruise leg associated with the selected Cruise record by clicking the "Create" button on the Cruise Legs section

The user can view or edit a given cruise leg by clicking the Edit icon next to the cruise leg's table row which will forward them to the View/Edit Cruise Leg page with the corresponding cruise leg selected

* + - * + Primary Survey Category

This tabular form can be used to associate new primary survey categories or edit associated primary survey categories for the selected cruise

* + - * + Secondary Survey Category

This tabular form can be used to associate new secondary survey categories or edit associated secondary survey categories for the selected cruise

* + - * + Target Species - ESA

This tabular form can be used to associate new target ESA species or edit associated target ESA species for the selected cruise

* + - * + Target Species - MMPA

This tabular form can be used to associate new target MMPA species or edit associated target MMPA species for the selected cruise

* + - * + Target Species - FSSI

This tabular form can be used to associate new target FSSI species or edit associated target FSSI species for the selected cruise

* + - * + Target Species - Other Species

This tabular form can be used to associate new target other species or edit associated target other species for the selected cruise

* + - * + Expected Species Categories

This tabular form can be used to associate new expected species categories or edit associated expected species categories for the selected cruise

* + - When creating/updating a cruise record simple validation is implemented on the form to require either the "Standard Survey Name" or the "Standard Survey Name (Other)" fields to be entered.
  + (Page ID: 230) View/Edit Cruise Leg
    - This page accepts two parameters; a Cruise ID and a Cruise Leg ID. If both parameters are blank the page displays an error message.
    - When a Cruise ID is specified the page will display all Cruise information and specific associated record values (e.g. cruise start/end dates, number of associated legs, fiscal year, URL, etc.) for the specified Cruise.
      * The Cruise Legs section of the page will display all associated Cruise Legs for the specified Cruise. Clicking the Edit button next to a given Cruise Leg will reload the page with the given Cruise Leg specified. When the mouse pointer hovers over any column heading the associated tooltip will be displayed.
    - If only a Cruise ID is specified (click the Create button on Cruise Legs section of the View/Edit Cruise page) an authorized user is allowed to create a new cruise leg record associated with the specified cruise. The data form will allow the new cruise leg information to be specified
      * Clicking on the "Create" button will save the record and reload the page with the new cruise leg selected allowing the user to create records (e.g. regions, gear, regional ecosystems, etc.) associated with the new cruise leg
      * Clicking on the "Create Another" button will save the record and reload the page with no cruise leg selected to allow the user to create another cruise leg record for the specified cruise.
    - If a Cruise Leg ID is specified (click the Edit icon on Cruise Legs section of the View/Edit Cruise or View/Edit Cruise Leg pages) an authorized user can edit the selected cruise leg record and all associated records.
      * Clicking on the "Delete" button will prompt the user to confirm if they want to delete the selected cruise leg record. Clicking the "OK" button will attempt to delete the record but it will fail unless there are no records that reference with the specified Cruise Leg record, if it is successful the user is forwarded to the Cruise List page. Clicking the "Cancel" button will cancel the delete action.
      * Clicking on the "Apply Changes" button will attempt to save the record and reload the page
      * Associated Records:
        + Gear

This tabular form can be used to associate new Gear or edit associated Gear for the selected cruise leg

* + - * + Regional Ecosystems

This tabular form can be used to associate new Regional Ecosystems or edit associated Regional Ecosystems for the selected cruise leg

* + - * + Regions

This tabular form can be used to associate new Regions or edit associated Regions for the selected cruise leg

* + - * + Leg Aliases

This tabular form can be used to create new Leg Aliases or edit existing Leg Aliases for the selected cruise leg

* + - When creating/updating a cruise leg record simple validation is implemented on the form to require that the Start Date must occur before the End Date.
  + Cruise Leg - reporting page
    - Color coded map of trackline for the given cruise leg
      * Placemarks for all surveys? Generalizable View from a given database to provide coordinates and a title (possibly info window content too)
    - Information region:
      * Cruise leg information
      * Chief Scientist
      * Departure/Arrival date
      * Region(s)
      * Etc.
    - Report table showing all associated data sets and their current status, DOI, link, etc.
    - Report table showing cruise participants and their status (cleared, pending, etc.)
  + Vessel Summary - reporting page
    - Select field to choose a given vessel
    - Color coded map (based on cruise leg) of all tracklines for cruises for the selected vessel
    - Summary table report of all cruise legs (clickable, forwards to Cruise Leg page) for the selected vessel
    - Chart report of all cruise legs (clickable, forwards to Cruise Leg page) for the selected vessel
* Admin Pages (pages meant for SOD administration - managing cruise reference tables and creating/configuring cruises):
  + Data Set Status, Data Set Types, Cruises, Cruise Legs (Cruise Participants, Cruise Leg Regions), Regions, Vessels - Tabular form/data grid
  + (> Phase 1) Export/Import process from VPASS to load/update allocation information from the official OMAO DB
* Participant Pages (allows participants to update their participant information like preferences and mark off cruise requirements including uploading files like IT security awareness, virus scan results screenshot):
* ITS Pages (allows ITS to update cruise participant information for things like laptop information, security scan, At Sea password updated, etc.):
* Chief Scientist Pages (allows chief scientist to define information about their cruise legs):
  + Data Sets (Tabula form/data grid)
* Login Page (Page ID: 101):
  + Description: this is the default login page that APEX generates when a new application is created that requires authentication. No custom coding/customization has been applied to this page.

## Security:

* Application Security (for details see [APEXApplicationSecurityControls.pdf](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-cruise-database\CRDMA\docs\APEXApplicationSecurityControls.pdf)):
  + \*\*Note: The [Application Pages](#app_pages) section outlines any exceptions to the standard APEX Application Security Controls
    - The results of the APEX Advisor for the given application version are available in the CDMA\docs\release\[MAJOR].[MINOR]\ folder where [MAJOR] is the major version and [MINOR] is the minor version of the application.
      * Advisor Report: CDMA v[MAJOR].[MINOR] - APEX Advisor Report.pdf
      * Advisor Report Explanation: CDMA v[MAJOR].[MINOR] - APEX Advisor Report.pdf
  + Authentication and Authorization Policy is implemented using the Authorization Application Module and is referenced in the [Database Documentation](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-cruise-database\docs\Centralized%20Cruise%20Database%20-%20Technical%20Documentation.docx)
  + Security Control SI-11 Error Handling is addressed using the Error Handling Module and is referenced in the [Database Documentation](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-cruise-database\docs\Centralized%20Cruise%20Database%20-%20Technical%20Documentation.docx)
  + Principle of least privilege: All of the data tables and support objects are defined in the CEN\_CRUISE data schema, the APEX application's parsing schema (shadow schema) which is used to actually interact with the underlying database is CEN\_CRUISE\_APP. CEN\_CRUISE\_APP has very limited permissions on the CEN\_CRUISE schema based on the required functionality of the application (see [CEN\_CRUISE\_APP\_permissions](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-cruise-database\CRDMA\docs\CEN_CRUISE_APP_permissions.xlsx)) to implement the principle of least privilege. CEN\_CRUISE has limited permissions on the DSC schema for the data history tracking package, the CEN\_CRUISE schema for the associated cruise data, and CEN\_UTILS for the coordinate conversion functions (shown in [CEN\_CTD\_permissions.xlsx](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-ctd\docs\CEN_CTD_permissions.xlsx)). Both schemas have not been granted any roles in the database instance.