# Centralized Cruise Database DVM Testing Documentation

## Overview:

The Centralized Cruise Database (CCD) was developed to manage cruise information for PIFSC. The Data Validation Module (DVM) was implemented to perform automated data Quality Control (QC) on the CCD to help ensure the quality of the data. The standard method for defining formal, repeatable test cases for the DVM and verifying them are defined in this document. All SQL queries should be executed on the CEN\_CRUISE schema.

## Definitions:

* Test Case Definitions: This excel file is used to define all formal test cases ([Centralized Cruise Database CCD DVM Test Cases.xlsx](Centralized%20Cruise%20Database%20CCD%20DVM%20Test%20Cases.xlsx))
* Verification Templates: These excel files (<verification_templates>) are used to list the individual test cases in a given category that are defined in the Test Case Definitions. The templates use excel formulas to verify that the results of a given script execution match the verified results.
* Verification Exports: These csv files ([verification\_templates\csv](verification_templates/csv)) are used to verify the results of a given script execution match the verified results using a file comparison tool to streamline the process.

## Test Case Verification SOP:

* Setup Test Cases:
  + Purge CCD data files from the database
    - Execute [delete\_ref\_data.sql](../../../SQL/queries/delete_ref_data.sql)
  + Load test data
    - Execute [load\_DVM\_PKG\_test\_data.sql](SQL/load_DVM_PKG_test_data.sql)
* Automated Verification:
  + Execute the DVM on each of the cruise records code by executing [batch\_DVM\_script.sql](../../../SQL/queries/batch_DVM_script.sql)
  + Description: Export the data from the database after the DVM has been executed on the test data and compare it to the Verification Exports.
  + SOP:
    - Generate the data reports (execute the associated SQL query for the given test case category and export the results in a .csv file with the specified naming convention)
    - Open a diff tool (e.g. WinMerge) and compare the exported query results (e.g. DVM\_error\_verification\_20200423.csv for a report generated on 4/23/2020) with the corresponding Verification Export (e.g. DVM\_error\_verification.csv) in the [verification\_templates\csv](verification_templates/csv) folder
      * If the two files' content matches exactly then the test cases have been verified successfully

## Test Case Definition SOP:

* Update the Test Case Definitions in the [Centralized Cruise Database CCD DVM Test Cases.xlsx](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-cruise-database\docs\test%20cases\DVM_PKG\Centralized%20Cruise%20Database%20CCD%20DVM%20Test%20Cases.xlsx) worksheet to add the expected results for the new test cases in the corresponding section based on the type of test case
* Update the corresponding <verification_templates> file(s) to add the expected result for the new test cases
  + Description: These Verification Templates translate the individual test cases in a given category defined in the Test Case Definitions into their corresponding query results so they can be compared with the query results from subsequent script executions. These template files contain excel formulas to compare the expected verified results with the results of a given script execution.
  + SOP:
    - Update the [load\_DVM\_PKG\_test\_data.sql](SQL/load_DVM_PKG_test_data.sql) test data loading script to load database records necessary to setup the test case conditions that can be used to verify that the expected outcome was produced.
      * [Cruise\_Leg\_DDL\_DML\_generator](../../Cruise_Leg_DDL_DML_generator.xlsx) can be used to generate the DML to load the DVM test data records in the [load\_DVM\_PKG\_test\_data.sql](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-cruise-database\docs\test%20cases\DVM_PKG\SQL\load_DVM_PKG_test_data.sql) script
      * \*\*Note: do not include any database fields in the verification queries that has a random element like primary key values or date/time values that depend on when the script was executed otherwise the automated test case verification approach will not work properly.
    - (For new test case categories only) Define a naming convention for the Verification Template and Verification Export
    - Execute the SQL query for the given test case category and export the results in a .csv file with the specified naming convention for the Verification Export
    - Copy the exported data from the .csv file into the "Database Export" worksheet of the corresponding verification template.
    - Open the "verification" worksheet and search for the "false" value specifying "values" in the "Look in" option. Confirm there are no matches found, if so the test cases have been successfully verified
* Replace the corresponding Verification Export .csv file in the [verification\_templates\csv](verification_templates/csv) folder and include it in the version control commit.
* Update documentation (if necessary) and commit changes to the version control system.

## Test Case Types:

* DVM Tests
  + Description: The [test cases worksheet](Centralized%20Cruise%20Database%20CCD%20DVM%20Test%20Cases.xlsx) lists instances of each validation criteria that is implemented in the data validation module (DVM) for the CCD.
  + Test Cases Worksheet Column Descriptions:
    - Cruise Name - The name of the cruise that is used in a given DVM test case
    - Leg Name - The name of the cruise leg that is used in a given DVM test case
    - Error Type Name - The Error Type Name for the given error type that is expected for the given data file
    - IND\_FIELD\_NAME - The IND\_FIELD\_NAME defined in the DVM for the given error type
    - Extra Notes - contains additional information about the given test case
  + Initial Cases:
    - The cases listed at the top of the document can be evaluated by executing [batch\_DVM\_script.sql](file:///C:\Users\Jesse.Abdul\Documents\Version%20Control\Git\centralized-cruise-database\SQL\queries\batch_DVM_script.sql) and then exporting the data using the queries specified below.
    - Errors:
      * Verification Template: [DVM\_error\_verification.xlsx](verification_templates/DVM_error_verification.xlsx)
      * Verification Export: [DVM\_error\_verification.csv](verification_templates/csv/DVM_error_verification.csv)
      * SQL:

select cruise\_name, LEG\_NAME\_CD\_LIST, err\_severity\_code, err\_type\_name, err\_type\_desc, ERROR\_DESCRIPTION, IND\_FIELD\_NAME from CCD\_CRUISE\_SUMM\_ERR\_V order by cruise\_name, err\_severity\_code, err\_type\_name;