# Vulnerability Data level check Tool - User Guide

This tool is developed using R Reproducibility functionality, which perform a comprehensive vulnerability data level checks and provide an overall report in word/ pdf/ html format as desired by user.

**Objective: -** It covers vulnerability cert test cases for completeness of various vulnerability tables such as VCC, VOCC, IMAP, VINV, VGEO, VCV, VDC, VHAZ and CGHS and their synchronization with other tables. Tool is kept at [N:\ModelCertification\Tools\VUL\_DataLevel\_Check\_Tool](file:///N:\ModelCertification\Tools\VUL_DataLevel_Check_Tool)

**Key Concept:-**

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| Table Check | Test Description | Table required |
| 1. VCC | To ensure that the Vuln VCC table is complete and correct | IMAP |
| **Objectives:** To ensure that VCC table is complete and up to the mark of standard. | | |
| **Test Methodology :**  A. Completeness and Correctness Check:-   1. Count of construction classes by each classification scheme type (RMS / ATC etc.). 2. Verify that no Construction records are duplicated per Scheme in VCC table. 3. Compare the VCC table against those available in JPTY vulnerability mapping database and ensure that there match for the class description and verify that all construction ids exist in global mapping database and construction classes are valid.   B. Consistency check   1. Confirm that distinct VCC records are present in IMAP table. | | |

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| Table Check | Test Description | Table required |
| 1. VOCC | To ensure that the VOCC table is complete and correct. | IMAP |
| **Objectives:-**  To ensure that VOCC table are complete and up to the mark of standard. Perform data level checks with updated VOCC table to make sure all the records of occupancy class per scheme per country are implemented properly without any duplication in distinct occupancy ID.  This check also ensures validity of all occupancy records via matching them with global mapping datasets. | | |
| **Test Methodology :**  A. Completeness and Correctness Check:-   1. Count of occupancy classes by each occupancy scheme type (RMS / ATC etc.). Verify it with modelers if it is correct. 2. Verify that no occupancy Ids records are duplicated per Scheme in VOCC table. 3. Compare the VCC table against those available in JPTY vulnerability mapping database and ensure that there match for the class description and verify that all occupancy ids exist in global mapping database and occupancy classes are valid. 4. Generate log file with above information,   B. Consistency check   1. Confirm that distinct VOCC records are present in IMAP table. | | |

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| Table Check | Test Description | Table required |
| 1. IMAP | To ensure that the IMAP table is complete and correct. | IMAP |
| **Objectives: -**  IMAP table is in sync with other associated tables. There should not be any missing records for associated tables (VCC, VOCC, VINV, VCV, and VGEO tables) | | |
| **Test Methodology :**  A. Consistency and Correctness Check:-   1. Verify that the unique numeric construction code records of VCC table (all unique combination of MAPCCLASSIF, MAPCCTIER1, MAPCCTIER2, and MAPCCTIER3 from VCC table) have records in IMAP. 2. Verify that all the numeric occupancy classes present in VOCC have corresponding record in IMAP table. 3. Verify that unique numeric records present in VGEO table corresponding to INV Keys are present in IMAP table. 4. Make sure that all INV RECNUM are unique combinations of their respective INV Key, CC, OCC, Height, Year Build, Floor area. 5. Check for unique ranges of Height and year bands for all INV\_OCC records    1. Part A- Check for unique ranges of Height, confirm with modelers if there is any discontinuity    2. Part B- Check for unique ranges of Year bands, confirm with modelers if there is any discontinuity | | |

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| Table Check | Test Description | Table required |
| 1. VGEO | To ensure that the VGEO table is complete and correct. | IMAP |
| **Objectives: -**  VGEO table is in sync with other associated tables | | |
| **Test Methodology :**  . A. Consistency check:-   1. INV\_KEY check from VGEO to IMAP. 2. Check BI key in VGEO from VBI 3. Check 'DC Key' in VGEO from vFoF1 table and Bin Index table (WI\_0\_JP\_INDEX.dat, SU\_0\_JP\_INDEX.dat, FL\_0\_JP\_INDEX.dat) | | |

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| Table Check | Test Description | Table required |
| 1. VINV | Verify that the VINV table is complete and correct | IMAP |
| **Objectives: -**  To ensure that VINV table is in sync with IMAP and VDC (FLINDEX and FLDATA) records. To check if sum of DEF\_INVPCT for each INV\_RECNUM is 100 % or less. | | |
| **Test Methodology :**  . A. Consistency check:-   1. Make sure that IMAP and VINV tables are in sync. There should not be missing records for any INV\_RECNUM record. 2. Check if sum of DEF\_INVPCT (Deferential Inventory Percentage) for each INV\_RECNUM are not 100 %. Notify error if sum (DEF\_INVPCT) are greater than 100%. Further, check with modelers if INV\_REC are less 100% INVPCT. 3. Verify that distinct PDCs (Primary Damage Curves) from VINV table are available in the WI\_0\_JP\_INDEX.dat, SU\_0\_JP\_INDEX.dat, FL\_0\_JP\_INDEX.dat binary data table. | | |

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| Table Check | Test Description | Table required |
| 1. ‘Subperil’\_0\_JP\_INDEX.dat and ‘Subperil’\_0\_JP\_DATA.dat | To ensure that the VDC data tables are complete. | IMAP |
| **Objectives: -**  Ensure the proper implementation of damage curves (VDC table- combined Index and Data file). | | |
| **Test Methodology :**  . A. Consistency check:-   1. All PDCs (Primary Damage Curves) listed in VINV table should be available in the INDEX table. 2. Make sure that all INDEX number are unique combinations of their respective PDC NUM, CGHSID, DC KEY. 3. check if unique CGHSID in VDC table are all available in CGHS table 4. Check if count of CGHSID for PDC\_NUM is same in CGHS 5. check if distinct count of HAZ SEV for each Index is same | | |

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| Table Check | Test Description | Table required |
| 1. VCV Check | To ensure that the VCV table is complete and correct in all respects | IMAP |
| **Objectives: -**  To ensure that VCV table is correct and complete. | | |
| **Test Methodology :**  . A. Consistency check:-   1. To check if VCV table and IMAP table have the same CV\_KEY. 2. Correctness check:- 3. To see if all the CV Hazard values are no bigger than their corresponding CV\_TOTAL values. 4. Observe if all the MDR curves are ascending monotonically by plotting damage curves by CV\_KEY and by CGHS\_ID. Please refer to all the MDR plots in the folder Plots for this check. 5. To check if CV Hazard and CV Total are monotonic within each damage curve   Please refer to all the CV\_HAZARD\_BY\_CVKEY plots in the folder Plots for this check. | | |

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| Table Check | Test Description | Table required |
| 1. CGHS and VHSR Check | To ensure that the CGHS and VHSR table are complete and consistent | IMAP |
| **Objectives: -**  To ensure that the CGHS and VHSR table are complete and consistent | | |
| **Test Methodology :**  . A. Consistency check:-   1. All CGHS\_ID in CGHS table are available in VHSR table: 2. All CGHS\_ID of CGHS table are available in WI\_0\_JP\_INDEX.dat, SU\_0\_JP\_INDEX.dat, FL\_0\_JP\_INDEX.dat binary data table. | | |