



# VR-Forces 5.1.1 Release Notes

This release note contains release-specific information for VR-Forces 5.1.1.

|                                                      |    |
|------------------------------------------------------|----|
| Systems Supported and System Requirements .....      | 2  |
| Compiler Compatibility on Windows .....              | 2  |
| Disk Space Requirements .....                        | 2  |
| The makData Package .....                            | 2  |
| License Manager .....                                | 2  |
| New Features and Major Changes .....                 | 3  |
| Plans .....                                          | 3  |
| New and Updated Tasks and Sets .....                 | 3  |
| Enhancements to Task- and Set-Related Features ..... | 3  |
| Simulation Objects .....                             | 3  |
| Simulation Object Editor .....                       | 4  |
| Navigation .....                                     | 4  |
| API Changes .....                                    | 4  |
| Fixed Bugs .....                                     | 6  |
| Feature List .....                                   | 21 |
| Known Problems .....                                 | 25 |

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## Systems Supported and System Requirements

For information about platform and system support, see the Product Specifications & Dependencies page on the MAK website at: <https://www.mak.com/mak-one-specs>. You can also find them in the Third-Party Licenses section of the Preface in the user guide and help.

For hardware requirements, see <https://www.mak.com/mak-one/support/help/hardware-recommendations>.

### Compiler Compatibility on Windows

MAK provides versions of product releases that have been compiled with different versions of Microsoft Visual C++. MAK ONE products built with VC 14 and later are binary compatible and will work together. When you run MAK ONE products together on the same computer, for example, VR-Vantage and VR-Forces, we strongly recommend that you run versions compiled with the same compiler or binary compatible compilers.

### Disk Space Requirements

A full installation of VR-Forces requires approximately 6 GB of disk space (plus 2 GB for the *VR-Forces Developers Guide*, installed separately on Windows) and an additional 69.8 GB for the complete makData 18 package, including the supplemental data package.

### The makData Package

VR-Forces 5.1.1 is compatible with the makData 18 package. MAK applications can share the same data package. For instructions on installing the data, see "[The makData Package](#)" in the *VR-Forces Users Guide*.

 The MAK data package contains data that VR-Forces requires. See the *Installing VR-Forces* chapter of the users guide.

### License Manager

VR-Forces 5.1.1 uses FLEXlm 11.17.1. You must install the license management software to run VR-Forces.

The MAK License Manager files are not part of the VR-Forces installer. You can download them from the MAK ONE Product Downloads page (<https://www.mak.com/mak-one-downloads>).

Installation of the license manager is covered in the *MAK ONE Installation Guide*, available online at <https://mak.com/mak-one-installation-guide>. Support is also available at <https://www.mak.com/mak-one/support/portal>.

## New Features and Major Changes

VR-Forces 5.1.1 has the following new features and updates.

### Plans

- You can now change the name of a Global Plan by selecting the plan in the Global Plans dialog box and then clicking the Edit Name button.

### New and Updated Tasks and Sets

- Updated the ballistic weapon system to allow ballistic guns to fire at any object when assigned the Fire Ballistic Gun task, even those not included in the hit probabilities/ammo select.
- The new Attack Aircraft engagement task causes one aircraft entity to attack another. If the aircraft entity assigned this task has a weapon system appropriate for the attack, it flies toward and fires on the target.
- The two new movement tasks, Crank Left and Crank Right, cause a fixed-wing aircraft to immediately turn to and fly a heading.

### Enhancements to Task- and Set-Related Features

- You can now configure buttons to display at the bottom of the Entity Control Panel, allowing you to immediately give the entity a task or set data request. For more information, see the section on "The Entity Control Panel" in the *Assigning Tasks to Simulation Objects* chapter of the VR-Forces help or *VR-Forces Users Guide*.
- The information for the Wait Duration task now displays as units of measurement. It is no longer shown only in seconds. For example, 15 minutes now displays as 15 min (not 900). In the UI, this displays in plans and the Tasks page of the Information dialog box.

### Simulation Objects

- Added support for the NETN Callsign attribute by adding it to the entity state component. There is now a parameter in the .entity files, which is left blank in the SMS files and the entity's marking text will be used as the default value. There is also a new set data request, Callsign, where you can define one to overwrite the default value.
- The Patriot Battery and SA-21 Battalion simulation object groups, available in the Create Object Palette for entity-level scenarios, have been updated. The launchers are now arrayed in a circle pointing outwards and the Engagement Area tactical graphic has been replaced with a Weapon Engagement Zone tactical graphic. The launchers' default position is inside the area, instead of at the edge facing into the area.

## New Simulation Objects

- Aircraft: F/A-18E Super Hornet, F/A-18F Super Hornet, KC-135R Stratotanker, MH-139 Grey Wolf.
- Ground Vehicles: M1083 MTV Canvas Cargo Truck, M1083 MTV Canvas Cargo w/ trailer, M1083A1 MTV Flatbed Truck, M1083A1 MTV Troop Seat Flatbed Truck, M1089A1 MTV Wrecker, M1157 MTV Dump Truck, M1157 MTV Troop Seat Dump Truck, SA-17 Grizzly Chair Back Engagement Radar (9S36), Technical Bus M240, Technical Bus M2.
- Surface water vessels: Saar 6 Class Corvette, Super Dvora MKI.

## Simulation Object Editor

- In VR-Forces, the Create Object Palette shows a screenshot of the selected simulation object at the bottom of the palette. You can now capture an image to replace the default for an existing object or add a new one for a new object.
- There is a new SMS, *AggregateLevelBase.sms*. The *AggregateLevel.sms* now inherits from *AggregateLevelBase.sms* as well as *base.sms*.
- In entity-level SMSs, you can now configure the amount of supply fuel that an entity has for refueling entities. Simply edit the fuel amount in the system properties of the refueling system.
- Templates for SMSs now have the *.tmpl* extension and are saved in the *./vrfSim/templates* folder of the SMS's directory. Selecting a template when you create a new model gives you a set of predefined settings which you can then adjust as needed.

## Navigation

- Users can configure VR-Forces to load all of the navigation data when loading a scenario by setting the new *loadAllNavigationDataOnTerrainLoad* parameter in the *vrfSim.mtl* file (found in *./appData/settings/vrfSim*). It does not require that an entity exist in the navigation area before loading the data. This allows you restore the behavior of 4.10 and earlier, but may negatively impact performance.

## API Changes

- Developers can now configure VR-Forces to save internal state data to a database, recording what happens in a simulation (who saw whom, who shot whom and how long after detection, which resources they used, what was destroyed, and so on). They can then use that data for analysis. Configure this using the *./appData/settings/databaseConfig.mtl* file, which includes comments that explain how to use it.  
  
VR-Forces 5.1.1 supports SQLite as the built-in database implementation. SQLite can record a single file per simulation engine. While much of the internal state data is recorded, you can add additional data and events using C++ and Lua.

See the new SDK toolkit examples:

- `addDatabaseEvent` shows how to add a new type of event to log to the database.
- `databaseClients` has a few client applications written in Python that can read data logged to a VR-Forces database.

For detailed information about the changes that affect the API, refer to Migration Guide section of the *VR-Forces Developers Guide*.

## Fixed Bugs

Table 1. Fixed Bugs

| Key                      | Summary                                                                        | Release Notes                                                                                                                                                                                    | Fix Version/s             |
|--------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <a href="#">DIG-893</a>  | PDB installer doesn't install PDBs to the right location                       | Corrected to ensure that the DI-Guy PDB files install in the ./bin directory, not the ./include directory.                                                                                       | DIG-13.7.1                |
| <a href="#">DIG-894</a>  | Fix package naming and install location.                                       | Updated the DI-Guy package naming conventions and default installation locations to be consistent with other MAK ONE products.                                                                   | DIG-IPB20,<br>DIG-13.7.1  |
| <a href="#">VRF-725</a>  | Stealth view commands in plan don't position observer correctly                | Corrected orientation settings to ensure that the Send View Control command in plans sets the observer view as desired.                                                                          | VRF-5.2,<br>VRF-5.1.1     |
| <a href="#">VRF-3305</a> | Rioters stand too close to fires                                               | Improved the behavior to ensure that human entities avoid being closer than 3 m to a fire. If a fire lights close to them, they will move away before they continue to riot.                     | VRF-5.2,<br>VRF-5.1.1     |
| <a href="#">VRF-7718</a> | GUI: crash in DtSubordinateFunctionListView::setupFrom()                       | Added a null pointer check to prevent the GUI (front-end) crash.                                                                                                                                 | VRF-5.0.3-k,<br>VRF-IPB20 |
| <a href="#">VRF-7760</a> | DI-Guy un-pauses visuals if picked up and placed while scenario is paused      | Fixed so that, when users reposition a DI-Guy character while a scenario is paused, it does not animate after it is placed until the scenario starts playing again.                              | VRF-5.1,<br>VRF-5.1.1     |
| <a href="#">VRF-8167</a> | Create Object Palette should remember previously selected entity-specific tags | The palette now recalls the secondary level tags when users re-select a primary level tag they previously used (for example, Ground Vehicle > Tracked).                                          | VRF-5.2,<br>VRF-5.1.1     |
| <a href="#">VRF-8170</a> | Users should be able to clear the Not option on filtered tags                  | Fixed to allow users to clear the Not option when set on a filter in the Create Object Palette.                                                                                                  | VRF-5.2,<br>VRF-5.1.1     |
| <a href="#">VRF-8174</a> | Adding a plan for multiple entities causes console spam                        | Fixed an issue that caused the text "Trying to tick a plan without a plan executor. Will not tick plan," to spam the console while a user created a plan for multiple entities at the same time. | VRF-5.2,<br>VRF-5.1.1     |
| <a href="#">VRF-8216</a> | Remove unused no-dong-strategic-missile-launcher.sysdef                        | Removed the unused sysdef file.                                                                                                                                                                  | VRF-5.2,<br>VRF-5.1.1     |
| <a href="#">VRF-8220</a> | SOE: Bad support points on some entities                                       | Fixed the support points.                                                                                                                                                                        | VRF-5.2,<br>VRF-5.1.1     |

Table 1. Fixed Bugs (continued)

| Key                      | Summary                                                                                             | Release Notes                                                                                                                                                                                                                                                                                                                                       | Fix Version/s                       |
|--------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| <a href="#">VRF-8224</a> | Simulation Object Editor filter can show units erroneously                                          | Fixed the filter to correctly show or hide child items on expansion based on the selected filter. For example, if you selected a non-unit filter, then selected the unit filter and expanded a unit to look at the simulation objects in it, and then selected the first filter again, previously the unit would still display in the Objects List. | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8236</a> | Create Command for a plan populates the most recently opened plan, not the currently selected plan. | Fixed to ensure that using Command > Create > Create Object adds Create Object command to the currently selected plan, not another plan that was opened most recently.                                                                                                                                                                              | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8248</a> | Need nullptr check for radio transmitter edge case                                                  | Added null pointer check.                                                                                                                                                                                                                                                                                                                           | VRF-5.1.1                           |
| <a href="#">VRF-8249</a> | Aerodrome filter is missing from Takeoff/Land on Runway tasks                                       | Fixed the parameter layout for these tasks to display the filter.                                                                                                                                                                                                                                                                                   | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8250</a> | Execute Surface Attack task does not pin to sidebar                                                 | Fixed to ensure that the parameters for the Execute Surface Attack task remain open when a user selects the Pin Command check box.                                                                                                                                                                                                                  | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8254</a> | Closing an Entity Control Panel crashes the GUI on Linux                                            | Fixed an issue that resulted in the application attempting to delete the same panel more than once, which caused a GUI crash.                                                                                                                                                                                                                       | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8255</a> | Weapon system does not choose new target if a previous target moves out of sight                    | Changed autonomous fire scripts to remove current targets that are no longer on the contacts list.                                                                                                                                                                                                                                                  | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8271</a> | Error in set function damage status handler                                                         | A bug in the damage component prevented the damage-function-status Set command from working. This has been fixed.                                                                                                                                                                                                                                   | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8274</a> | User documentation incorrectly mentions support of HLA 1.3                                          | Removed other mentions of HLA 1.3 that were erroneously included in the user documentation after support was deprecated.                                                                                                                                                                                                                            | VRF-5.1.1                           |
| <a href="#">VRF-8275</a> | Import Scenario Objects: Routes are imported as projected 2D - i.e., without vertices altitude      | Fixed to ensure Import Scenario Objects works as expected.                                                                                                                                                                                                                                                                                          | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8281</a> | Clutter aircraft created over oceans where ADS-B data is sparse don't have realistic altitudes      | Fixed the calculations to ensure that the aircraft are at an appropriate height over sea level.                                                                                                                                                                                                                                                     | VRF-5.2,<br>VRF-5.1.1,<br>VRF-5.1-a |
| <a href="#">VRF-8290</a> | Incorrect task completion test in RWA turn-to controller                                            | Fixed a bug that, in some rare cases, prevented a rotary-wing aircraft's turn-to task from completing. The completion test in the controller had a bug.                                                                                                                                                                                             | VRF-5.2,<br>VRF-5.1.1               |

**Table 1. Fixed Bugs (continued)**

| Key                      | Summary                                                                                        | Release Notes                                                                                                                                                                                                                                                                                                                                                              | Fix Version/s                       |
|--------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| <a href="#">VRF-8295</a> | Sim. engine crashes using DtFireCruiseMissileTask with several cruise-missile-launcher systems | Fixed to prevent crashes when an entity is equipped with more than one cruise missile system and is tasked to fire one of them. Also made a fix to ensure that, when you edit a plan with the Fire Cruise Missile task, the task parameters display the cruise missile you selected when you assigned the task.                                                            | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8297</a> | Update country list for and add refueling to Rafale B                                          | Added refueling system and the countries Croatia and Greece.                                                                                                                                                                                                                                                                                                               | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8301</a> | Clutter ships should use the dynamic ocean altitude instead of 0                               | Replaced hardcoded instances of 0 altitude with defaultSurfaceElevation(). This ensures that clutter watercraft are placed realistically on the dynamic ocean when it is at a desired non-0 elevation.                                                                                                                                                                     | VRF-5.2,<br>VRF-5.1.1,<br>VRF-5.1-a |
| <a href="#">VRF-8304</a> | Sync matrix won't continue plan after sync matrix is closed                                    | Fixed to ensure that setting a plan to continue across a phase is saved when users close the Synchronization Matrix.                                                                                                                                                                                                                                                       | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8309</a> | Console warning on Rafale B for probe                                                          | The console message for entities to deploy refueling parts that the entity isn't configured to have is now Information and not a Warning.                                                                                                                                                                                                                                  | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8310</a> | Task Visualizations are not working correctly for the Follow Entity task                       | Fixed a problem where an aircraft entity performing the Follow Entity task after taking off from a runway showed task visualizations that did not clearly indicate what the entity was doing.                                                                                                                                                                              | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8316</a> | Moving aircraft around on the ground (and only on the ground) gets them into a bad state       | When you placed an aircraft on the ground, the application used to mistakenly place it in the air when you moved it from one location of the globe to another. Now, if you have a ground-clamped aircraft and no longer wish it to be ground-clamped after a double-click move, you must specifically change the altitude, otherwise it will always remain ground-clamped. | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8317</a> | Ambush graphics missing                                                                        | Fixed the Ambush tactical graphic to ensure that it displays correctly.                                                                                                                                                                                                                                                                                                    | VRF-5.1.1                           |
| <a href="#">VRF-8320</a> | Fire Missile Launcher task gets stuck in an infinite loop                                      | Fixed to enable an entity that can fire ballistic missiles to fire first on an entity and then a location. Previously, when assigned those tasks in that order, it would fail to fire on the location.                                                                                                                                                                     | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8321</a> | Gun actuator does not compute detonation location in some cases                                | Added code to compute entity coordinates of the detonation location when an entity is hit after a miss.                                                                                                                                                                                                                                                                    | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8322</a> | Line of Fire function does not compute impact point in some cases                              | Fixed to enable the firing entity to strike a parent entity if the specified target is embarked on it.                                                                                                                                                                                                                                                                     | VRF-5.2,<br>VRF-5.1.1               |

Table 1. Fixed Bugs (continued)

| Key                      | Summary                                                                                                   | Release Notes                                                                                                                                                                                                                                                             | Fix Version/s         |
|--------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <a href="#">VRF-8330</a> | LOS tests miss human entities in some cases                                                               | Included a third dimension (height) when calculating the maximum of the object's max dimension (width, length, and height).                                                                                                                                               | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8336</a> | bool<br>DtConvoyTaskController::setupSubordinates<br>returns true for an empty subordinate list           | Added a check to prevent an issue that occurred when all subordinates were deleted before being assigned a task.                                                                                                                                                          | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8350</a> | rwKeywordValuePairs.xml has "Ground<br>Ground Vehicle Category"                                           | Changed instances of "Ground Ground" to just "Ground".                                                                                                                                                                                                                    | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8352</a> | SOE: can't tag pseudo-aggregates with a<br>country                                                        | Updated the UI to allow users to assign tags and countries to pseudo-aggregates. Also added more space for the assemblies.                                                                                                                                                | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8360</a> | SOE SMS upgrade tool doesn't account for<br>second degree of inheritance                                  | Improved the upgrade tool to check whether inherited SMSs reference one of the base SMSs.                                                                                                                                                                                 | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8362</a> | SOE: crash doing "replace" subordinate in<br>pseudoaggregate composition                                  | Fixed an issue that resulted in memory corruption, which caused the crash.                                                                                                                                                                                                | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8364</a> | SOE crash doing aggregate-level roll-up                                                                   | Fixed to unselect items before the user selects items to roll up.                                                                                                                                                                                                         | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8365</a> | Adding sim. objects using the Order of Battle<br>panel does not mark all entities as created<br>correctly | Fixed to ensure that the system properly recognizes when an entity is placed.                                                                                                                                                                                             | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8376</a> | SOE: New ballistic missiles cannot be added or<br>modified                                                | Fixed to ensure that new ballistic missile files save correctly.                                                                                                                                                                                                          | VRF-5.1.1             |
| <a href="#">VRF-8378</a> | SOE: Upgrading SMS without a scripts folder<br>will cause system scripts to have no content               | Fixed to create the scripts directory upon promotion or, if one cannot be created, prevent the promotion.                                                                                                                                                                 | VRF-5.1.1             |
| <a href="#">VRF-8379</a> | Remote component attachment by marking<br>text does not work                                              | Fixed the issue where the wrong information was written out.                                                                                                                                                                                                              | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8387</a> | SOE: Select Power dialog doesn't refresh<br>correctly                                                     | Fixed an issue in the Select Power and Determinant dialog box where the field labels at the bottom didn't update when a user changed the Power selection (for example, they first selected Abstract and then changed to Armor Piercing). The fields now update correctly. | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8388</a> | SOE: Scrollbars are disabled when viewing<br>read-only ancestor assemblies                                | Fixed to allow users to scroll tables even when they are read only.                                                                                                                                                                                                       | VRF-5.2,<br>VRF-5.1.1 |

**Table 1. Fixed Bugs (continued)**

| Key                      | Summary                                                                                                                                      | Release Notes                                                                                                                                                                                                                                                                     | Fix Version/s         |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <a href="#">VRF-8389</a> | The Scenario Information dialog box should open by default                                                                                   | Restored the default behavior for the VR-Forces GUI, where opening a scenario then opens the Scenario Information dialog box when it has a description. (To disable this, clear the Show Scenario Information Dialog check box in the GUI Settings page of Application Settings.) | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8391</a> | Typo in warning for Execute Surface Attack task                                                                                              | Corrected the spelling in the Lua script.                                                                                                                                                                                                                                         | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8396</a> | Plug-ins have lost the ability to add command-line arguments                                                                                 | This is fixed.                                                                                                                                                                                                                                                                    | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8398</a> | Can't make template from SOE despite there being a menu item for it                                                                          | Fixed to ensure that the SOE's Model menu does not show Make Template as enabled unless the user first selects a simulation object to use as the basis.                                                                                                                           | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8399</a> | Ammunition/equipment/weapons lists don't display in derived aggregate SMSs                                                                   | The ammunition, equipment, and weapons in an included SMS now display in the Edit Ammunition and Equipment dialog box for your reference. You cannot edit them.                                                                                                                   | VRF-5.1.1             |
| <a href="#">VRF-8402</a> | Error in queryNode.lua causes script error when loading scenario with query node.                                                            | Fixed an issue in a behavior tree node to resolve the Lua error that previously occurred when loading a scenario.                                                                                                                                                                 | VRF-5.1.1             |
| <a href="#">VRF-8404</a> | Immediate explosion of explosive-device with "detect-own-force" set to true                                                                  | Fixed the logic in simpleProximitySensor.cxx that caused the immediate explosion. Explosive devices set to trigger when they detect their own force no longer trigger themselves.                                                                                                 | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8407</a> | Aggregate As checkbox shows up in true aggregates in AggregateLevel SMS but not in the psuedo-aggregates that will be used for aggregate as. | For aggregates and pseudo-aggregates in the SOE, fixed to ensure that the checkbox displays when appropriate.                                                                                                                                                                     | VRF-5.1.1             |
| <a href="#">VRF-8408</a> | Existing templates do not display in the template list when making a new model                                                               | Templates for SMSs now have the .tmpl extension and are saved in the ./vrfSim/templates folder of the SMS's directory. Selecting a template when you create a new model provides a set of predefined settings which you can then adjust as needed.                                | VRF-5.1.1             |
| <a href="#">VRF-8413</a> | SOE: pseudo-aggregate's arrow to show expandable disappears when selected if empty                                                           | Fixed to ensure that simulation objects that have no subordinate objects do not display as though they do.                                                                                                                                                                        | VRF-5.1.1             |

**Table 1. Fixed Bugs (continued)**

| Key                      | Summary                                                                                                   | Release Notes                                                                                                                                                                                                                                                                           | Fix Version/s                       |
|--------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| <a href="#">VRF-8414</a> | AggregateLevel.sms is set to not use shared data despite the fact all the objects point to shared visuals | Updated the SMS file to specify visual data is at the Shared Data level.                                                                                                                                                                                                                | VRF-5.1.1                           |
| <a href="#">VRF-8422</a> | Weather not always initialized on rewind                                                                  | Fixed to ensure that the weather initializes correctly when the user rewinds a scenario.                                                                                                                                                                                                | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8429</a> | Crash when rewinding scenario with different clutter areas                                                | Fixed a multithreading access issue that could cause a crash.                                                                                                                                                                                                                           | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8430</a> | Rename Documentation Installer-VRF                                                                        | Some security programs, such as virus protection software, block executables from running if they have a file name that ends with something like *.doc.exe. Changed the extension to *.docu.exe to allow users to install the product documentation without manually changing the name. | VRF-5.1.1                           |
| <a href="#">VRF-8432</a> | Clutter aircraft created outside of area                                                                  | Corrected the calculation for the points where an aircraft enters or exits a clutter area, which previously could cause the creation of aircraft farther outside the area than desired.                                                                                                 | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8443</a> | SOE: "Aggregate As" option should not be true by default when creating New Model from Existing.           | Fixed to display the Allow as Aggregate As Option--which enables the simulation object to be included in the Aggregate As dialog box--only for objects that can have subordinates. When users create a new true aggregate, this is not enabled by default.                              | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8447</a> | vrfSim console prints too much when missing a surfChar.map file for a model                               | Changed the language in the console from "Failed to open..." to "Unable to open..." in cases where a model does not have surfChar.map, as that is not unusual.                                                                                                                          | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8454</a> | Eurofighter Typhoon - Refueling Probe articulated part error                                              | Corrected parameter data in boom-extension-9760-9760 to resolve the error when using the Deploy Refueling Probe task for the Eurofighter Typhoon aircraft entity.                                                                                                                       | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8457</a> | SOE: Edit ammunition/equipment/weapons: display items from included SMS, but make them read-only.         | Improved to show values from the included SMS for reference in the Edit Ammunition and Equipment dialog box. They are not editable.                                                                                                                                                     | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8459</a> | Displaying the bullseye range rings floods the console with error messages                                | Fixed the issue that caused the error messages to spam the console when displaying range rings on a Bullseye tactical graphic.                                                                                                                                                          | VRF-5.2,<br>VRF-5.1.1,<br>VRF-5.1-b |
| <a href="#">VRF-8465</a> | Copy/paste error in signal for domain changed for TDL. Sends protocol rather than domain.                 | This is fixed.                                                                                                                                                                                                                                                                          | VRF-5.2,<br>VRF-5.1.1               |

Table 1. Fixed Bugs (continued)

| Key                      | Summary                                                                                                                                          | Release Notes                                                                                                                                                                                                                                          | Fix Version/s         |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <a href="#">VRF-8476</a> | Remove continuous printing about out of fuel                                                                                                     | Improved the code to ensure that the application doesn't spam the console with messages about rotary-wing entities being out of fuel. This improves performance in scenarios with large numbers of rotary-wing entities when they have no more fuel.   | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8477</a> | Remove launch-point from handheld-grenade-tossing.sysdef.                                                                                        | Removed the code from the sysdef file.                                                                                                                                                                                                                 | VRF-5.1.1             |
| <a href="#">VRF-8478</a> | Fire Ballistic Gun task does not work with Simulation Object Plan Variable                                                                       | Fixed to ensure that users can select a simulation object plan variable.                                                                                                                                                                               | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8479</a> | Throw Grenade at Target task only throws m67 grenades even after selecting different type                                                        | Fixed to ensure that the entity uses the selected munition type.                                                                                                                                                                                       | VRF-5.1.1             |
| <a href="#">VRF-8482</a> | SIM: Aggregate-level Activate Jammer task assumes emitter ID 1, making jammer sysdefs incompatible with other onboard systems like radar sensor. | Fixed to not always use emitter ID 1 for the Activate Jammer task. Previously, entities with more than one emitter system, such as radar and a jammer, there was a possibility that the task would not work correctly because of the emitter ID issue. | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8488</a> | Scenario Scripts are not cleared out when starting another scenario                                                                              | Fixed to look at the correct scenario when populating the list of scripts.                                                                                                                                                                             | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8495</a> | Sim. engine crash when using large number of threads                                                                                             | Fixed to allow for numerous threads and prevent the crash.                                                                                                                                                                                             | VRF-5.1,<br>VRF-5.1.1 |
| <a href="#">VRF-8496</a> | Weapon Selection widget does not parse default value properly                                                                                    | Fixed to ensure that the selected weapon persists in the field when the task is reopened.                                                                                                                                                              | VRF-5.1.1             |
| <a href="#">VRF-8502</a> | Fixed-wing aircraft should not take off from underground                                                                                         | Fixed issue with ground clamping caused when terrain had not fully paged in.                                                                                                                                                                           | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8504</a> | Issues creating routes when Attach Next Point to Mouse is not selected                                                                           | Adding a new point no longer adds two at the same time. Users can edit routes as desired.                                                                                                                                                              | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8510</a> | Aggregate bridge should not build instantly                                                                                                      | Fixed an issue where, when multiple engineering units in an aggregate-level scenario worked together to build a bridge, it would be completed too rapidly.                                                                                             | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8512</a> | SIM: React_To_Air_Threats.lua doesn't use sysdef range when taskParameters.defenseRadius is 0                                                    | Fixed the check on the defense radius.                                                                                                                                                                                                                 | VRF-5.2,<br>VRF-5.1.1 |

**Table 1. Fixed Bugs (continued)**

| Key                      | Summary                                                                                      | Release Notes                                                                                                                                                                                                                                    | Fix Version/s                       |
|--------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| <a href="#">VRF-8518</a> | Problem using time management                                                                | Fixed by preventing VR-Forces from deleting queued messages, which caused problems in the GUI when saving.                                                                                                                                       | VRF-5.2,<br>VRF-5.1.1,<br>VRF-5.1-b |
| <a href="#">VRF-8520</a> | Expendables controller not using auto-launch reset time correctly                            | Fixed to ensure that the first time a controller detects a munition against which to launch countermeasures, the auto-launch happens immediately and, after that, it waits for the configured reset time between auto-launching countermeasures. | VRF-5.2,<br>VRF-5.1.1,<br>VRF-5.1-b |
| <a href="#">VRF-8523</a> | Entity label information is not persistent past rewind in the GUI                            | Fixed buffering issue that caused custom labels to reset to the default label when the user rewound the scenario.                                                                                                                                | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8528</a> | Sim. engine crash on running HawaiiAir scenario                                              | Fixed by removing an entity's task visualizations when deleting the entity.                                                                                                                                                                      | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8532</a> | SOE: Embarkation information is not saved correctly for derived entities                     | Fixed to use the embarkation settings for the inherited entity instead of the parent.                                                                                                                                                            | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8535</a> | DIGuyCharacter.metx file is not loaded from visuals directory of SMS                         | Fixed issues with mappings for DI-Guy characters.                                                                                                                                                                                                | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8537</a> | Human move-to task disabled after previously getting stuck                                   | If a human entity became stuck while performing a move-to task--for example, because movement on a nav mesh failed and the task timed out--then any future use of that task would time out immediately. This fix resets the timeout.             | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8541</a> | Autoembarking soldiers on rigid-hulled boats makes them swim in the boat                     | Fixed an issue where a DI-Guy might perform a swimming animation while onboard a rigid-hulled boat entity if placed there using automatic embarkation instead of with an embarkation task or set data request.                                   | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8548</a> | Flight command tasks don't trigger task completion in plans if previously run as a subtask   | Fixed the fly-heading, fly-altitude, and fly-heading-and-altitude tasks such that they can run correctly as tasks when previously used as a subtask. This ensures that they will reach task completion when used in a plan.                      | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8550</a> | Explosives configured to cause slight or moderate injuries have no effect on lifeforms       | Fixed to process detonation events correctly, allowing the human damage actuator to process them.                                                                                                                                                | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8554</a> | Missile aimed with scripted movement below sea level will send multiple detonations when hit | Updated to check next frame instead of current frame for the entity being destroyed and firepower killed.                                                                                                                                        | VRF-5.2,<br>VRF-5.1.1               |

**Table 1. Fixed Bugs (continued)**

| Key                      | Summary                                                                                              | Release Notes                                                                                                                                                                                     | Fix Version/s                       |
|--------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| <a href="#">VRF-8557</a> | Remote entities, IFF transceiver component                                                           | Fixed to allow attachment of IFF to remote entities.                                                                                                                                              | VRF-5.2,<br>VRF-5.1.1,<br>VRF-5.1-c |
| <a href="#">VRF-8558</a> | PrimitiveIndicesCollector messages should be at Verbose level instead of Warning                     | When the terrain has some geometry types that VR-Forces simply cannot interpret, the application only shows messages at the Verbose notification level.                                           | VRF-5.2,<br>VRF-5.1.1,<br>VRF-5.1-c |
| <a href="#">VRF-8560</a> | Plan tasks that are suspended and resumed are not cleaned up                                         | Fixed to ensure that plan tasks are removed from the task status list when appropriate.                                                                                                           | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8574</a> | Make it easier to set global ID in HLA                                                               | The new method setGlobalIdentifierForPublication allows you to set a global ID for HLA. See the header file for comments explaining how to utilize it.                                            | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8580</a> | GUI Memory Leak                                                                                      | Addressed memory leak issues.                                                                                                                                                                     | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8582</a> | Decimal lat/lon gridlines do not persist                                                             | Updated the code to validate the grid line type to use only when a terrain is loaded. Previously, it would not always respect the user settings and display undesired grid lines.                 | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8584</a> | Add -fpermissive CXX flag to Linux example builds                                                    | Updated to improve the building of examples for Linux.                                                                                                                                            | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8586</a> | NETN Callsign not set                                                                                | Fixed to set the Callsign attribute on the network.                                                                                                                                               | VRF-5.1.1                           |
| <a href="#">VRF-8604</a> | Wind speed and visibility for local weather areas not showing up in Info dialog                      | Fixed to ensure that the weather conditions display in a Weather area's Information dialog box.                                                                                                   | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8611</a> | 2D symbol incorrect for Australian Soldier Base and Australian Soldier Driver                        | Fixed to display the correct symbols for the entities.                                                                                                                                            | VRF-IPB20,<br>VRF-5.1.1             |
| <a href="#">VRF-8614</a> | Incorrect area mentioned in procedure for Creating an Air Turbulence Area in the user documentation. | Corrected the type of area that the procedure is for. (Previously, it erroneously referenced the wind corridor.)                                                                                  | VRF-5.2,<br>VRF-5.1.1               |
| <a href="#">VRF-8615</a> | Vehicle Crew FT is unable to move in certain circumstances                                           | Updated the mount-hq-section script. Created a new 2-man vehicle crew unit that has 2 soldiers in it and used that to replace the notional crew (no subordinates) in the Mech and Stryker squads. | VRF-5.2,<br>VRF-5.1.1               |

Table 1. Fixed Bugs (continued)

| Key                      | Summary                                                                                           | Release Notes                                                                                                                                                              | Fix Version/s         |
|--------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <a href="#">VRF-8619</a> | Invisible boom/drogue when performing an air refueling                                            | The KC-135 Stratotanker entity model is no longer equipped with fueling drogues, only a boom. The new KC-135R Stratocaster entity model has both drogues and a boom.       | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8622</a> | translationFileCreate not working on Linux for scripts directory                                  | Fixed to use the correct slashes to ensure that the TS files are created correctly for Linux as well as Windows.                                                           | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8623</a> | Loading sampleScenarioBatch.bsn batch file fails                                                  | Updated the paths to point to the location of the scenario files.                                                                                                          | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8627</a> | GUI and sim. engine with different session IDs have menus enabled for other session's entities    | Fixed to ensure that entities can be changed only as allowed by session and message ID.                                                                                    | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8629</a> | Crowds should not have Embarkation and Radio tasks                                                | Created a new Crowd.ope (copied from Aggregate.ope) and set Radio and Embarkation controllers to False. Updated various herd and crowd entities to use the new Crowd.ope   | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8634</a> | Embarkation points are incorrect                                                                  | Fixed enumerations on embarkation slots that were broken and thereby prevented embarkation.                                                                                | VRF-5.1.1             |
| <a href="#">VRF-8637</a> | Object list panel does not reflect changing entity force from neutral to friendly/opposing causes | When a user changes the force for an entity, it now moves to the correct force category in the Objects List.                                                               | VRF-5.1.1             |
| <a href="#">VRF-8638</a> | State properties not shown in Information Dialog                                                  | Fixed an issue with adding a state. The Information dialog box was not properly determining when state property page items should display, causing it to always hide them. | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8641</a> | Icon for Army Corps (Agg Level) is wrong.                                                         | Added missing entry for Corps. Army to coreUnitElementDefinitions.leaf file and set the icon to use the one defined in MILSTD 2525c.                                       | VRF-5.1.1             |
| <a href="#">VRF-8650</a> | Destroying lasing entity does not remove laser designator                                         | If a lasing entity is destroyed, all its lasing tasks now stop.                                                                                                            | VRF-5.1.1             |
| <a href="#">VRF-8654</a> | Remove option to use old icons                                                                    | Removed the Use Retro Icons check box from the GUI Settings page of Application Settings.                                                                                  | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8660</a> | Documentation for AddCommModel example needs to update scenario location                          | Corrected to point to the ./userData/scenarios/Sample directory.                                                                                                           | VRF-5.1.1             |
| <a href="#">VRF-8661</a> | Bullseye should not require altitude because that can cause aircraft to crash                     | Updated the Move to Bullseye Offset task to use the aircraft's altitude (instead of sending it to the bullseye's altitude).                                                | VRF-5.2,<br>VRF-5.1.1 |

Table 1. Fixed Bugs (continued)

| Key                      | Summary                                                                             | Release Notes                                                                                                                                                                                                                                                                                        | Fix Version/s         |
|--------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <a href="#">VRF-8668</a> | Cruise missiles and fixed-wing aircraft can very occasionally get NAN locations     | Corrected an issue with cruise missiles where they previously could get NAN locations due to uninitialized controller member variables. Fixed both the call to set them, and initialized them to 0 on allocation as a defensive measure against any other code path that might do something similar. | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8670</a> | Tracers are not visible                                                             | Corrected mappings in fire mapping file to be consistent with numbers that are on the munition entity.                                                                                                                                                                                               | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8673</a> | Example addSensorPropagator scenario needs updates                                  | Corrected the scenario to ensure that the tank had not yet detected the objects, thus supporting the example.                                                                                                                                                                                        | VRF-5.1.1             |
| <a href="#">VRF-8677</a> | The Add Set Dialog example needs updates                                            | Changed the Rate label in the example's dialog box to Speed.                                                                                                                                                                                                                                         | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8694</a> | Example Display State Data not showing correct status                               | Changed the displayStateData example to print statements when there is no reportable status for objects.                                                                                                                                                                                             | VRF-5.1.1             |
| <a href="#">VRF-8700</a> | Global plan's Quick Launch option is not saved after reinitialization.              | Fixed to ensure that global plans display on the Quick Launch Panel after a user reinitializes the scenario. Previously, the button would be lost.                                                                                                                                                   | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8718</a> | Generic lifeforms have aviation map icon                                            | Assigned a blank circular icon as the default for lifeforms in the data configuration files to ensure that is used for generic lifeforms.                                                                                                                                                            | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8719</a> | Missing or changed Javelin entity                                                   | The ATGM (Stinger) human entity referenced in some units was not available. Updated to use a valid Javelin entity.                                                                                                                                                                                   | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8721</a> | Mech PLT vehicles don't have enough embarkation slots for all entities in unit      | Changed the Bradley to allow more human entities to sit in the Mechanized Platoon (USA Army M2)'s vehicles.                                                                                                                                                                                          | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8722</a> | Mech PLT crews don't show up as embarked after mounting vehicles                    | Added the ability for an aggregate to embark on an entity. There is also now a method that updates the parent scene object if a model set is removed.                                                                                                                                                | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8728</a> | SOE crash when removing a subordinate from an entity-level unit                     | Fixed to prevent enabling invalid aggregate entities.                                                                                                                                                                                                                                                | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8742</a> | Pinned task visualizations can disappear                                            | Fixed to ensure that entities pinned to display task visualizations continue to do so when the user selects another simulation object.                                                                                                                                                               | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8764</a> | cruiseMissileSystem:getAttribute("launched-munition-name") returns nil value in Lua | Fixed an issue that erroneously cleared the value immediately after the task was sent.                                                                                                                                                                                                               | VRF-5.2,<br>VRF-5.1.1 |

Table 1. Fixed Bugs (continued)

| Key                      | Summary                                                                            | Release Notes                                                                                                                                                                           | Fix Version/s         |
|--------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <a href="#">VRF-8789</a> | Human prone posture bounding volume is incorrect                                   | Adjusted the modifier used on the bounding volume height of prone humans.                                                                                                               | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8790</a> | Crash when DtAmmunitionManager table is empty                                      | Before accessing the table, the application now checks that the table is initialized.                                                                                                   | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8797</a> | Crash on exit after Set Scenario Run Duration dialog is opened                     | The application now creates an instance of the dialog, which is stored by the menu item, preventing the crash.                                                                          | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8803</a> | Sim. engine crash while embarking a human                                          | Corrected error in the code that could result in a crash.                                                                                                                               | VRF-5.1.1             |
| <a href="#">VRF-8804</a> | Scripted Set and Pattern Hold task breaks user defined Lua binds in some instances | Fixed an issue in the code where the application stores task IDs from tasks that were interrupted and stored in the OOB.                                                                | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRV-5233</a> | Some light point groups for procedural airport lights are not cleaned up           | Ensured that removal completes by fixing an issue that prevented lightpoint registration process in the lightgroup manager from fully completing for taxiway and distance-to-go lights. | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5337</a> | Help for simTreesTool references incorrect data version                            | Fixed to reference the correct version in the example for the --XmlOutputfile (-x) command-line option for the simTreesTool.                                                            | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5523</a> | NVG CameraFX Blur is more clear at 0.26 then 0.21                                  | Resolved by always using Gaussian blur. Also made a fix to correctly use horizontal instead of vertical.                                                                                | VRV-3.1.1             |
| <a href="#">VRV-5610</a> | indirect.log is saved to wrong location and with the wrong name                    | Fixed to ensure that the file is saved in the correct directory with the correct name.                                                                                                  | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5669</a> | Potential crashes due to Null pointers in SpeedTree                                | Fixed to prevent crashes from issues with SpeedTree.                                                                                                                                    | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5692</a> | Crash on MAK Earth (online) using main view plus one inset                         | Fixed in osgEarth.                                                                                                                                                                      | VRV-3.1.1             |
| <a href="#">VRV-5697</a> | Crash on exit (HLA, GUI)                                                           | Added more error checks to prevent crashes.                                                                                                                                             | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5715</a> | Ship wakes are broken                                                              | Updated the code for Dynamic Ocean to get the shader change that addresses an issue with bright lights on the ocean surface while preserving ship wakes.                                | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5717</a> | Buoyancy is broken on Linux                                                        | Fixed to ensure that watercraft move with the waves in Linux environments.                                                                                                              | VRV-3.2,<br>VRV-3.1.1 |

**Table 1. Fixed Bugs (continued)**

| Key                      | Summary                                                                                | Release Notes                                                                                                                                                               | Fix Version/s         |
|--------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <a href="#">VRV-5721</a> | Insets broken with UTM                                                                 | Fixed in osgEarth.                                                                                                                                                          | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5723</a> | The same GL Studio HUD on two different windows do not function independently          | Fixed to ensure that the application does not handle an event unless it is performed on the same channel where the HUD is rendered.                                         | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5744</a> | Magnification doesn't pull in high resolution procedural trees                         | Fixed to ensure that procedural trees load when the observer view zooms in on terrain with trees.                                                                           | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5771</a> | Replace deprecated function calls after updating Scalable SDK to version 10.0          | Updated the Scalable SDK function calls to the correct alternatives.                                                                                                        | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5799</a> | CIGI entities remain visible when entity alpha is set to 0                             | Fixed an initialization error to ensure that entities are invisible when the alpha parameter is zero.                                                                       | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5801</a> | Vegetation floating above terrain even after elevation completely pages in             | Fixed in osgEarth.                                                                                                                                                          | VRV-3.1.1             |
| <a href="#">VRV-5803</a> | Make DtOsgChannel member functions stopUsingModelSet() and startUsingModelSet() public | In the API, changed the startUsingModelSet and stopUsingModelSet member functions to public instead of protected. Added more developer documentation about these functions. | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5804</a> | SpeedTree ocean reflections missing when using zoom magnification                      | Improved reflection code to ensure zoom magnification is passed correctly to the reflection scatchpad view.                                                                 | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5805</a> | SpeedTree shadows missing on distant trees when using zoom magnification               | Improved shadow code to ensure zoom magnification is passed correctly to the shadow scatchpad view.                                                                         | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5809</a> | Packaged developer documentation should be pulled from the Doxygen build machine       | To ensure that the class documentation includes everything that it needs, changed how the product pulls the files into the package.                                         | VRV-3.1.1             |
| <a href="#">VRV-5810</a> | Models or parts of models sometimes fail to show when using indirect                   | Fixed an issue where model parts such as tank treads would not render.                                                                                                      | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5836</a> | Marking a GPU-Based Video Stream as an Autostart Video Stream causes issues with CUDA  | Fixed to allow streams to autostart.                                                                                                                                        | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5841</a> | Change the DtElementDefinitionManager to allow root nodes from multiple files          | Updated to allow for .hier files not rooted to nodes in the core hierarchy file.                                                                                            | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5842</a> | Not sending CIGI SOF in Async mode                                                     | Removed the 'readyToSendCigiMessages' method to comply with CIGI standards when sending Start of Frame messages.                                                            | VRV-3.2,<br>VRV-3.1.1 |

Table 1. Fixed Bugs (continued)

| Key                      | Summary                                                                     | Release Notes                                                                                                                                                                                                                                                                                                               | Fix Version/s         |
|--------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <a href="#">VRV-5856</a> | Crash when flying around Switzerland and reloading the terrain              | Improved the code to prevent issues that could cause software crashes.                                                                                                                                                                                                                                                      | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5860</a> | OpenFlight models can render incorrectly when using Gouraud shading modes.  | Updated to prevent the use of Gouraud drawing modes in OpenFlight models. Those are now forced to Lit mode.                                                                                                                                                                                                                 | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5861</a> | medfTool is not properly converting FBX model when using optimizations      | Fixed issues with the nodes for FBX models that are converted to MEDF.                                                                                                                                                                                                                                                      | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5866</a> | Plan View should not show night textures                                    | Fixed to ensure that night textures are not used when the sky is disabled, such as in plan view (2D).                                                                                                                                                                                                                       | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5875</a> | Offset visualizer parameter does not work for the Image Symbol Visualizer   | Made a number of fixes to allow the Offset visualizer parameter to be used correctly.                                                                                                                                                                                                                                       | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5891</a> | Entity Label location doesn't support Unit Display Settings' decimal places | Fixed to display the latitude and longitude in an entity's label information with the number of decimal places specified in the Display Units Settings (previously was limited to 3 decimal places). This applies when the entity's label is set to display the location and the coordinate system is set to Lat/Lon (Dec). | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5896</a> | Rename Documentation Installer-VRV                                          | Some security programs, such as virus protection software, block executables from running if the file name is something like *.doc.exe. Changed the extension to *.docu.exe to allow users to install the product documentation without manually changing the name.                                                         | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5912</a> | Scene object updater crash on entity reinitialization                       | Fixed issues with logic in the kinematic state objects.                                                                                                                                                                                                                                                                     | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5919</a> | RDE Video streaming with metadata crashes                                   | Fixed the problem where the metadata publisher was trying to access drivers, which the Remote Display Engine does not have.                                                                                                                                                                                                 | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5928</a> | View magnification can cause non-indirect entities to disappear             | Fixed an issue that caused non-indirect entities to disappear from the observer view when changing the magnification.                                                                                                                                                                                                       | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5930</a> | Wheels on vehicles do not steer or turn correctly                           | Fixed to ensure that wheels turn correctly, regardless of the vehicle's location in the world.                                                                                                                                                                                                                              | VRV-3.2,<br>VRV-3.1.1 |
| <a href="#">VRV-5932</a> | Add updated Microsoft Visual C++ redistributable to product installer       | Updated to the latest Microsoft Visual C++ 2015-2022 redistributable, which is backward compatible. Including the redistributable allows the application to run when it is the only MAK ONE product on a clean installation.                                                                                                | VRV-3.2,<br>VRV-3.1.1 |

**Table 1. Fixed Bugs (continued)**

| Key                      | Summary                                                                         | Release Notes                                                                                                                                                                                                                                                                                                                                                                                                        | Fix Version/s                        |
|--------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| <a href="#">VRV-5933</a> | Obscurant isn't being read in correctly for a default environment of clear      | Obscurant wasn't correctly read for a default environment of Clear. Updated so that the application doesn't directly set the visibility distance; first, it goes through checks based on the type of obscurant.                                                                                                                                                                                                      | VRV-3.2,<br>VRV-3.1.1,<br>VRV-3.0.3k |
| <a href="#">VRV-5938</a> | Threading crash loading some unicode characters                                 | Added a mapping that can find the index of the cached glyph from the font glyph index. (The application already loaded any required glyphs for the unicode string.)                                                                                                                                                                                                                                                  | VRV-3.2,<br>VRV-3.1.1                |
| <a href="#">VRV-5939</a> | Earth file with multiple CDB elevation/imagery does not seem to work anymore    | Fixed the CDB extent calculation to allow earth files with multiple CDB elevation/imagery to work correctly.                                                                                                                                                                                                                                                                                                         | VRV-3.2,<br>VRV-3.1.1                |
| <a href="#">VRV-5945</a> | Tracers are not visible                                                         | Corrected mappings in fire mapping file to be consistent with numbers that are on the munition entity.                                                                                                                                                                                                                                                                                                               | VRV-3.1.1                            |
| <a href="#">VRV-5950</a> | Remove option to use old icons                                                  | Removed the Use Retro Icons check box from the General Application Settings page of Application Settings.                                                                                                                                                                                                                                                                                                            | VRV-3.2,<br>VRV-3.1.1                |
| <a href="#">VRV-5952</a> | Cannot embark aggregates onto entities and vice versa                           | The application now supports aggregates that are embarked on entities.                                                                                                                                                                                                                                                                                                                                               | VRV-3.2,<br>VRV-3.1.1                |
| <a href="#">VRV-5955</a> | Some local weather effects are not synchronized when systems utilize hasNTPSync | Updated the syncing to allow users to override it.                                                                                                                                                                                                                                                                                                                                                                   | VRV-3.2,<br>VRV-3.1.1                |
| <a href="#">VRV-5961</a> | Loading a display configuration from the command line fails                     | Fixed to ensure the application correctly loads embedded Qt windows based on the desired display configuration.                                                                                                                                                                                                                                                                                                      | VRV-3.2,<br>VRV-3.1.1                |
| <a href="#">VRV-5982</a> | CIGI channel resize policy forced to Fixed                                      | Removed hard-coded behavior setting CIGI channel Projection Resize Policy to Fixed. CIGI channel will not retain existing Resize Policy. Default Resize Policy is Horizontal. If Fixed is desired for a CIGI channel, you can set the CIGI channel to Fixed in the Display Engine Configuration panel. Refer to the Windows, Channels, and Display Engines chapter in either the help or the VR-Vantage Users Guide. | VRV-3.2,<br>VRV-3.1.1                |

# Feature List

Table 2. Feature List

| Key                      | Summary                                                                                            | Release Notes                                                                                                                                                                                                                                                                                                                             | Fix Version/s         |
|--------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <a href="#">VRF-7214</a> | Improve DtCgf API for scenario snapshots                                                           | Improved the capability to create and manage snapshots using the DtCgf API.                                                                                                                                                                                                                                                               | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-7248</a> | Configurable buttons in Entity Control Panel                                                       | You can now configure buttons to display at the bottom of the Entity Control Panel, allowing you to immediately give the entity a task or set data request. For more information, see the section on "The Entity Control Panel" in the Assigning Tasks to Simulation Objects chapter of the VR-Forces help or VR-Forces Users Guide.      | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-7631</a> | Add extra-types-to-detect parameter for sensors in the SOE                                         | Sensor systems now display the Additional Detection Types (extra-types-to-detect) parameter in the properties for that sensor system. You can edit the list of detection types.                                                                                                                                                           | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8006</a> | Add an option to load nav data at scenario load                                                    | The new loadAllNavigationDataOnTerrainLoad parameter in the vrfSim.mtl file (found in ./appData/settings/vrfSim) allows you to set the behavior to load all navigation data in a scenario, regardless of whether any entity is using it. This allows you restore the behavior of 4.10 and earlier, but may negatively impact performance. | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8189</a> | SOE: Aggregate level - Make assemblies from units                                                  | In an aggregate-level SMS, you can now create a new assembly from an existing unit. After adjusting the unit as desired, simply click the Copy As Assembly button. You can then edit the new assembly as needed.                                                                                                                          | VRF-5.1.1             |
| <a href="#">VRF-8210</a> | Move Sensor Field of View PDU doc to Interoperability Guide                                        | This information, which was previously found on the MAK ONE Product Support Knowledge Base ( <a href="https://www.mak.com/knowledge">https://www.mak.com/knowledge</a> ), is now in the MAK ONE Interoperability Guide.                                                                                                                   | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8268</a> | SOE - Implement functionality to create entity preview images, for the GUI's Create Object Palette | In VR-Forces, the Create Object Palette shows a screen capture of the selected simulation object at the bottom of the palette. You can now capture an image to replace the default for an existing object or add a new one for a new object.                                                                                              | VRF-5.2,<br>VRF-5.1.1 |

Table 2. Feature List (continued)

| Key                      | Summary                                                                                                         | Release Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Fix Version/s         |
|--------------------------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <a href="#">VRF-8296</a> | Update Air Defense Object Groups                                                                                | The Patriot Battery and SA-21 Battalion simulation object groups, available in the Create Object Palette for entity-level scenarios, have been updated. The launchers are now arrayed in a circle pointing outwards and the Engagement Area tactical graphic has been replaced with a Weapon Engagement Zone tactical graphic. The launchers's default position is inside the area, instead of at the edge facing into the area.                                                                                                                                                                                                                                                                                                                                                   | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8302</a> | Wait Duration task in plan should have better text display                                                      | The value for Wait-Duration now shows units of measurement, making it much easier to read. It is no longer shown only in seconds. For example, 15 minutes now displays as "15 min" (not "900"). In the UI, this displays in plans and the Tasks page of the Information dialog box.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8308</a> | Fire Ballistic Gun task should cause entity to fire when munition/weapon system doesn't support the target type | Updated the ballistic weapon system to allow ballistic guns to fire at any object when assigned this task, even those not included in the hit probabilities/ammo select.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8373</a> | Make MACH Speed show up to two decimal places                                                                   | In the Entity Control Panel, the Mach number now shows up to two decimal places. Previously, it showed no decimal places. (Other parts of the GUI correctly showed two places of accuracy for the Mach number.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8397</a> | Break out AggregateLevel SMS to base and derived aggregate-level SMSs                                           | There is a new SMS, AggregateLevelBase.sms. The AggregateLevel.sms now inherits from AggregateLevelBase.sms as well as base.sms.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8423</a> | Log simulation events to database for analysis                                                                  | <p>Developers can now configure VR-Forces to save data to a database, recording what happens in a simulation (who shot whom, which resources they used, what was destroyed, and so on). They can then use that data for analysis. Configure this using the ./appData/settings/databaseConfig.mtl file, which includes comments to explain how to use it. VR-Forces 5.1.1 supports SQLite as the built-in database implementation. SQLite can record a single file per simulation engine. You can log database events in C++ and Lua.</p> <p>See the new SDK toolkit examples: addDatabaseEvent shows how to add a new type of event to log to the database; databaseClients has a few client applications written in Python that can read data logged to a VR-Forces database.</p> | VRF-5.2,<br>VRF-5.1.1 |

Table 2. Feature List (continued)

| Key                      | Summary                                                                                                        | Release Notes                                                                                                                                                                                                                                                                                                                                           | Fix Version/s         |
|--------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <a href="#">VRF-8438</a> | Aircraft attack task                                                                                           | The new Attack Aircraft task causes one aircraft entity to attack another. If the aircraft entity assigned this task has a weapon system appropriate for the attack, it flies toward and fires on the target.                                                                                                                                           | VRF-5.1.1             |
| <a href="#">VRF-8455</a> | Create two simple Lua scripts to fly a plane to a heading offset from current heading either "left" or "right" | The two new movement tasks, Crank Left and Crank Right, cause a fixed-wing aircraft to immediately turn to and fly a heading. The default is to change by 60 degrees, turning at 6 degrees per second.                                                                                                                                                  | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8461</a> | Renaming of Global Plans                                                                                       | You can now change the name of a Global Plan by selecting the plan in the Global Plans dialog and then clicking the Edit Name button.                                                                                                                                                                                                                   | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8508</a> | Make max refueling capacity of tanker configurable in SOE                                                      | In entity-level SMSs, you can now configure the amount of supply fuel that an entity has for refueling entities. Simply edit the fuel amount in the system properties of the refueling system.                                                                                                                                                          | VRF-5.1.1             |
| <a href="#">VRF-8610</a> | Add support for NETN Callsign                                                                                  | Added support for the NETN Callsign attribute by adding it to the entity state component. There is now a parameter in the .entity files, which is left blank in the SMS files and the entity's marking text will be used as the default value. There is also a new set data request, Callsign, where you can define one to overwrite the default value. | VRF-5.1.1             |
| <a href="#">VRF-8762</a> | Add Lua function to get the Callsign of an entity                                                              | The new Lua function, getCallsign, returns the published NETN callsign for an entity. Refer to the Lua documentation.                                                                                                                                                                                                                                   | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8763</a> | Add Lua functions to get the AIS data for an entity                                                            | The new Lua function, luaGetAisData, returns the AIS data for an entity. Refer to the Lua documentation.                                                                                                                                                                                                                                                | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8766</a> | Support adding sensors to buildings.                                                                           | This feature allows objects that use the Cultural_Feature_With_Radio.ope platform file (such as buildings) to be configured with sensors. The sensors operate correctly without requiring modification of the sensor systems to include a contact-fusion controller. Note that the sensors must be configured with object types to detect.              | VRF-5.2,<br>VRF-5.1.1 |
| <a href="#">VRF-8767</a> | Disable publishing observers by default                                                                        | Observers are no longer published by default. You must choose Settings > Publish Observers to enable broadcast of observer information.                                                                                                                                                                                                                 | VRF-5.2,<br>VRF-5.1.1 |

Table 2. Feature List (continued)

| Key                      | Summary                                                                           | Release Notes                                                                                                                                                                                                                                                                                                                                                             | Fix Version/s                                     |
|--------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| <a href="#">VRV-15</a>   | 'Point Replacement' Models loaded in through the .earth file require EMAT support | Added support for materially classified point model replacement features provided by osgEarth by using the necessary EMAT files. This displays terrain features such as trees correctly in SensorFX.                                                                                                                                                                      | VRV-3.2,<br>VRV-3.1.1                             |
| <a href="#">VRV-3502</a> | Create frameless window type                                                      | Added a new window type, FramelessWindow, which creates a window with no frame that you can position and size to span multiple monitors. For example, it is useful for a flight station that uses multiple monitors. The frameless window has a better framerate than multiple display engines because there is a single window and therefore a lower performance impact. | VRV-2.7j,<br>VRV-3.2,<br>VRV-3.1.1,<br>VRV-3.0.3k |
| <a href="#">VRV-5056</a> | Upgrade ScalableSDK to version 10.0                                               | Updated SDK to version 10.0. This addresses compatibility issues with dynamic eyepoint mesh files (POL) produced by newer versions of Scalable Display Manager.                                                                                                                                                                                                           | VRV-3.2,<br>VRV-3.1.1                             |
| <a href="#">VRV-5746</a> | Support separate spacing values for GARS and MGRS                                 | Gridlines now have separate fixed-spacing values for MGRS and GARS. All degree systems only use spacing that is appropriate for those coordinate systems.                                                                                                                                                                                                                 | VRV-3.2,<br>VRV-3.1.1                             |
| <a href="#">VRV-5812</a> | osgEarth - support MVT (Mapbox Vector Tiles) FeatureSource                        | Added support for osgEarth's MVTFeatureSource for terrains. Refer to Pelican Mapping's osgEarth documentation on layers for more information.                                                                                                                                                                                                                             | VRV-3.1.1                                         |
| <a href="#">VRV-5824</a> | Allow Decal Projector Polygons to be completely filled with a texture             | When you define a fill texture for 2D areas, you can now set it to stretch the image. (The default is to repeat it.) Set the EnableTextureFillFitToArea model definition parameter to true, or use the enabletexturefillfittoarea element definition attribute or the setIsTextureFillFittedToAreaEnabled API. The setIsStippleUsedForFill parameter has been deprecated. | VRV-3.2,<br>VRV-3.1.1                             |
| <a href="#">VRV-5829</a> | Show CUDA Runtime information in console along with GPU information               | When running VR-Vantage applications with the console, users can now see the CUDA information in the console.                                                                                                                                                                                                                                                             | VRV-3.2,<br>VRV-3.1.1                             |
| <a href="#">VRV-5864</a> | Upgrade GStreamer to the latest version                                           | Updated to 1.24.5 for Windows. (Red Hat uses system libraries.)                                                                                                                                                                                                                                                                                                           | VRV-3.2,<br>VRV-3.1.1                             |
| <a href="#">VRV-5974</a> | Disable publishing observers by default                                           | Observers are no longer published by default. You must select the Publish Observers check box in the Simulation Connections dialog box.                                                                                                                                                                                                                                   | VRV-3.2,<br>VRV-3.1.1                             |

## Known Problems

Problems can arise with any product. MAK has a knowledge base of the problems that we know about, which is always changing as new problems are identified and new solutions are found. To learn how to address known problems with VR-Forces and other MAK ONE products, access the MAK ONE Product Support Knowledge Base:

<https://www.mak.com/knowledge>.

If the problem you are experiencing is not addressed in the knowledge base, contact support for assistance: <https://www.mak.com/support>.

For information about other issues that you might encounter while using the VR-Forces, see the [Troubleshooting](#) appendix in the *VR-Forces Users Guide*.