Ground Combat in the JICM

Barry A. Wilson, Daniel B. Fox

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Preface

The Joint Integrated Contingency Model (JICM) is a very large simulation system that encompasses the strategic and operational levels of land, air, and naval warfare with a global set of models and databases. This user manual for the ground combat portion of JICM is intended as a tutorial and reference manual for users of the JICM. JICM was developed at RAND under the sponsorship of the Director of Net Assessment in the Office of the Secretary of Defense as part of RAND’s National Defense Research Institute, a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, and the defense agencies. This manual was developed as part of the project “Improving Methods of Strategic Analysis: Next Steps in a Five-Year Development Plan.” Comments and inquiries are welcome and should be addressed to the authors or to Dr. Gregory Treverton, Director of RAND’s International Security and Defense Policy Center.
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Summary

The Joint Integrated Contingency Model (JICM) is a very large simulation system that encompasses the strategic and operational levels of land, air, and naval warfare with a global set of models and databases. This document is an annotated briefing adapted from a class on the use of the ground combat portion of the JICM. It is an overview of the terrain, forces, and combat processes; the orders that manage combat; the parameters that set combat rates; and the displays that show what is occurring. It assumes that the reader is familiar with the operation of the JICM system software and the orders necessary to move ground forces to the theater of combat.

Part of the JICM, the Integrated Theater Model (ITM), integrates the best features of the two previous JICM theater combat models, the main theater model (CAMPAIGN-MT) and the alternate theater model (CAMPAIGN-ALT). It retains the CAMPAIGN-ALT representation of theater geography as a flexible network of important places and the links between those places, and uses the interactive orders and displays interface of CAMPAIGN-MT.

The first section of this document covers the network representation of the theater. The second section discusses ground units and the commands that organize them for combat on the network. The third section discusses ground combat, describing how forces come into contact, the attrition process, and the movement resulting from combat. The fourth section addresses the employment of attack helicopters and long-range artillery (such as ATACMS). The fifth and last section describes how units are managed within a command, how logistics are delivered, and how defenses are built.

The appendices provide details on all the parameters affecting the ground portions of the model.
Acknowledgments

The Joint Integrated Contingency Model (JICM) is a living program in the sense that a RAND development team is actively pursuing ongoing improvements in functionality and methodology of the system. Besides the authors, RAND staff actively involved in the JICM include Bruce W. Bennett, Arthur M. Bullock, Mark Hoyer, Carl Jones, John Schrader, and Robert Weissler. Bruce Bennett, the major designer for the current version of the ground combat model, contributed significantly with suggestions and editorial review.

While assistance from others is gratefully acknowledged, the authors assume responsibility for any shortcomings of this documentation.
## Acronyms and Abbreviations

<table>
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<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADef</td>
<td>Air defense</td>
</tr>
<tr>
<td>AI</td>
<td>Air interdiction</td>
</tr>
<tr>
<td>APC</td>
<td>Armored personnel carrier</td>
</tr>
<tr>
<td>APED</td>
<td>Anti-Platform Equivalent Divisions</td>
</tr>
<tr>
<td>ARMD</td>
<td>Armored division</td>
</tr>
<tr>
<td>Arty</td>
<td>Artillery</td>
</tr>
<tr>
<td>ARV</td>
<td>Armored Reconnaissance Vehicle</td>
</tr>
<tr>
<td>ATACMS</td>
<td>Army Tactical Missile System</td>
</tr>
<tr>
<td>ATGM</td>
<td>Anti-Tank Guided Missile</td>
</tr>
<tr>
<td>BAI</td>
<td>Battlefield air interdiction</td>
</tr>
<tr>
<td>BMP</td>
<td>(Russian) Infantry Combat Vehicle</td>
</tr>
<tr>
<td>BRDM</td>
<td>(Russian) Amphibious Scout Vehicle</td>
</tr>
<tr>
<td>C3</td>
<td>Command, control, and communications</td>
</tr>
<tr>
<td>C3I</td>
<td>Command, control, communications, and intelligence</td>
</tr>
<tr>
<td>CAS</td>
<td>Close air support</td>
</tr>
<tr>
<td>CBTZ</td>
<td>Combat zone (rear position)</td>
</tr>
<tr>
<td>CFCK</td>
<td>Combined Forces Command, Korea</td>
</tr>
<tr>
<td>Cmd</td>
<td>Command</td>
</tr>
<tr>
<td>CONL</td>
<td>Control line</td>
</tr>
<tr>
<td>CONUS</td>
<td>Continental United States</td>
</tr>
<tr>
<td>CSS</td>
<td>Combat Service Support</td>
</tr>
<tr>
<td>DBX</td>
<td>Debugger (programming tool)</td>
</tr>
<tr>
<td>DCA</td>
<td>Defensive counter-air</td>
</tr>
<tr>
<td>D-day</td>
<td>Day on which hostilities commence (literally, Day-day)</td>
</tr>
<tr>
<td>DMZ</td>
<td>Demilitarized zone</td>
</tr>
<tr>
<td>DoS</td>
<td>Days of supply</td>
</tr>
<tr>
<td>DPRK</td>
<td>Democratic People’s Republic of Korea</td>
</tr>
<tr>
<td>d-rate</td>
<td>Dispersal rate</td>
</tr>
<tr>
<td>ED</td>
<td>Equivalent Division</td>
</tr>
<tr>
<td>EED</td>
<td>Effective Equivalent Division</td>
</tr>
<tr>
<td>FLOT</td>
<td>Forward line of own troops (same as MOFL)</td>
</tr>
<tr>
<td>FSS</td>
<td>Fast Sealift Ship</td>
</tr>
<tr>
<td>Gnd</td>
<td>Ground</td>
</tr>
<tr>
<td>Gov, Govt</td>
<td>Government</td>
</tr>
<tr>
<td>G-type</td>
<td>Ground (force) type</td>
</tr>
<tr>
<td>Helo</td>
<td>Helicopter, attack helicopter</td>
</tr>
<tr>
<td>H-hour</td>
<td>Hour at which hostilities commence (literally, Hour-hour)</td>
</tr>
<tr>
<td>ICBM</td>
<td>Intercontinental ballistic missile</td>
</tr>
<tr>
<td>IFV</td>
<td>Infantry fighting vehicle</td>
</tr>
<tr>
<td>Inf, Infty</td>
<td>Infantry</td>
</tr>
<tr>
<td>IR</td>
<td>Infrared</td>
</tr>
<tr>
<td>ITM</td>
<td>Integrated Theater Model</td>
</tr>
<tr>
<td>ITV</td>
<td>Improved TOW Vehicle</td>
</tr>
<tr>
<td>JICM</td>
<td>Joint Integrated Contingency Model</td>
</tr>
<tr>
<td>JSTARS</td>
<td>Joint Surveillance and Target Attack Radar System</td>
</tr>
<tr>
<td>K-Kill</td>
<td>Catastrophic kill</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>KPD</td>
<td>Kilometers per day</td>
</tr>
<tr>
<td>KST</td>
<td>Kilo-short tons (1000s of tons)</td>
</tr>
<tr>
<td>KV</td>
<td>Killer-Victim</td>
</tr>
<tr>
<td>LAW</td>
<td>Light anti-tank weapon</td>
</tr>
<tr>
<td>LCAC</td>
<td>Landing Craft Air Cushioned</td>
</tr>
<tr>
<td>LoC</td>
<td>Line(s) of communication</td>
</tr>
<tr>
<td>LR-Arty</td>
<td>Long-range artillery</td>
</tr>
<tr>
<td>Mech</td>
<td>Mechanized</td>
</tr>
<tr>
<td>MEF</td>
<td>Marine Expeditionary Force</td>
</tr>
<tr>
<td>MLRS</td>
<td>Multiple-Launch Rocket System</td>
</tr>
<tr>
<td>Mvr</td>
<td>Maneuver</td>
</tr>
<tr>
<td>MOFL</td>
<td>Most forward line</td>
</tr>
<tr>
<td>MPS</td>
<td>Maritime Prepositioned Shipping</td>
</tr>
<tr>
<td>MRLS</td>
<td>Multiple Rocket Launcher System</td>
</tr>
<tr>
<td>NUCARTY</td>
<td>Nuclear Artillery</td>
</tr>
<tr>
<td>OAS</td>
<td>Offensive air support</td>
</tr>
<tr>
<td>OCA</td>
<td>Offensive counter-air</td>
</tr>
<tr>
<td>OMG</td>
<td>Operational Maneuver Group</td>
</tr>
<tr>
<td>PAX</td>
<td>Passengers</td>
</tr>
<tr>
<td>PED</td>
<td>Platform Equivalent Divisions</td>
</tr>
<tr>
<td>POD</td>
<td>Port of debarkation</td>
</tr>
<tr>
<td>POE</td>
<td>Port of embarkation</td>
</tr>
<tr>
<td>POL</td>
<td>Petroleum, oil, lubrication</td>
</tr>
<tr>
<td>POMCUS</td>
<td>Prepositioned unit sets</td>
</tr>
<tr>
<td>roro</td>
<td>Roll-on/roll-off [sealift]</td>
</tr>
<tr>
<td>SED</td>
<td>Situational equivalent division</td>
</tr>
<tr>
<td>SLBM</td>
<td>Submarine-launched ballistic missile</td>
</tr>
<tr>
<td>SOF</td>
<td>Special Operations Forces</td>
</tr>
<tr>
<td>SP</td>
<td>Self-propelled</td>
</tr>
<tr>
<td>SPOD</td>
<td>Seaport of debarkation</td>
</tr>
<tr>
<td>SPOE</td>
<td>Seaport of embarkation</td>
</tr>
<tr>
<td>TED</td>
<td>Tactical equivalent division</td>
</tr>
<tr>
<td>TOE</td>
<td>Table of Equipment (authorized equipment: list for a force)</td>
</tr>
<tr>
<td>TOW</td>
<td>Tube-launched optically tracked, wire-guided (missile)</td>
</tr>
<tr>
<td>VSRBM</td>
<td>Very Short Range Ballistic Missile</td>
</tr>
<tr>
<td>WRM</td>
<td>War Reserve Materiel</td>
</tr>
<tr>
<td>WSDS</td>
<td>World Situation Data Set</td>
</tr>
</tbody>
</table>
1. ITM Ground Combat—Ground Network

<table>
<thead>
<tr>
<th>ITM Ground Combat</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ground Network</td>
</tr>
<tr>
<td>2. Ground Forces</td>
</tr>
<tr>
<td>- Units</td>
</tr>
<tr>
<td>- Ground Commands</td>
</tr>
<tr>
<td>3. Ground Combat</td>
</tr>
<tr>
<td>- Contacts</td>
</tr>
<tr>
<td>- Attrition</td>
</tr>
<tr>
<td>- Movement</td>
</tr>
<tr>
<td>4. Helos and Long-Range Arty</td>
</tr>
<tr>
<td>5. Force Management</td>
</tr>
<tr>
<td>- LoC Commander</td>
</tr>
<tr>
<td>- Logistics</td>
</tr>
<tr>
<td>- Defenses</td>
</tr>
</tbody>
</table>

This document is an annotated briefing from a class on the use of the ground combat portion of the Integrated Theater Model (ITM) in the 1.0 version of the Joint Integrated Contingency Model (JICM). It is an overview of the terrain, forces, and combat processes, the orders that manage combat, the parameters that set combat rates, and the displays that show what is occurring. It assumes that the reader is familiar with the operation of the JICM system software and the orders necessary to move ground forces to the theater of combat.

Other documents provide an overall introduction to the JICM. Additional documentation covers aspects of the JICM models other than the ground combat model.

This document comprises five sections. The first section covers the network representation of the theater. The second section discusses ground units and the commands that organize them for combat on the network. The third section discusses ground combat, describing how forces come into contact, the attrition process, and the movement resulting from combat. The fourth section addresses the employment of attack helicopters and long-range artillery (such as ATACMS). The fifth section describes how units are managed within a command, how logistics are delivered, and how defenses are built.
Previous versions of the JICM required theater overlays to be constructed over regions of the world where combat was to occur and the precise locations of forces needed to be known. The ITM replaces these isolated theaters with a single global network for both surface movement and combat, defined in a new JICM data file `place.unc`. More detail on JICM geography can be found in Section 3 of the JICM 1.0 Summary (Bruce W. Bennett et al., Santa Monica, Calif.: RAND, MR-383-NA, 1994). This file provides data for two new JICM geographic concepts: places and links. Places are nodes in the surface network, and links define lines of communication (LoCs), which represent direct surface (road/rail) connections between places.

The JICM 1.0 land network database is extensive, with nearly 1000 places and 2000 links, but its resolution around the world varies to serve varying analytical needs. For example, where the network must support an ITM combat model adjudication, it can be made as rich as potential maneuver plans dictate. The JICM 1.0 network defines over 90 places and 140 links just in North and South Korea to support expected ITM scenarios there. Where only surface mobility needs to be simulated, a less rich network suffices. For example, the data for the continental United States have only about 65 places and 120 links to approximate the interstate road and rail networks across which strategically deploying forces would move. Finally, where analytic interest is trivial (accounting of forces only), the network can be very sparse. Thus, the African data contain only one or two places per country and the major connections between them.
Each place has a unique name, which must not include blank characters or duplicate any other name in the database. It is usually the name of a city or town (e.g., New York, Seoul, and Moscow) but need not be (e.g., Jct5Kor1 is the name of a place needed to describe a major network node in South Korea that is not located near any significant town).

Places are located by latitude and longitude and by JICM region. Places are also used to represent islands by placing them in a sea region and designating the supporting land region for control and supply purposes. For example, Diego Garcia is represented as an "island" place of the land region UK but is located in the sea region WIndian (West Indian Ocean).

The owner of a place is sometimes different from the owner of the region in which it is located. For example, the United States controls Guantánamo in Cuba in the JICM place data.

If a place is a seaport, its sealift capacity is described as a combination of five different berth types: deep roro, roro, container, tanker, and other. The comments in place.unc give a more complete description of the berth types.

The place data are specified in the data file place.unc. Places can be freely added by adding entries in this file (up to a current maximum of 3000) and remaking the database.
The links define the arcs of a network. Individual links may intersect other links (arcs) only at places. The JICM input processor ensures that this assumption is not violated.

A link is defined by naming a pair of places to be connected. By default, the road distance between places is assumed to be the great-circle distance multiplied by a parameter (1.1 by default) to account for the divergence of real roads from the straight-line distance. Explicit distances can also be entered directly. If a link crosses a region border, the border is assumed to be midway between the two places, unless otherwise specified (e.g., the German-Polish border is explicitly defined to be 6% of the way along the link from Frankfurt to Poznan).

The link data are also specified in the data file `place.unc` and can be added to by the analyst up to a current maximum of 10,000.
The network of places and links is sufficient for positioning and routing forces and can be used to specify where combat will be simulated. But it does not include enough geographic data for simulating combat. The places and links are one-dimensional (points and arcs only), whereas combat forces have varying capabilities according to the type and expanse of battlefield terrain. In short, battles require area data.

Rather than include terrain data for the entire world in the database, terrain is entered through scripts given at the start of the scenario. JICM 1.0 provides terrain scripts for Korea in the use file “korea.geog” and terrain scripts for Poland in the use file “poland.geog” in the directory “Run/Env”, which also contains other use files with scripts and orders that build combat environments.

The LANDWAR->terrain script (see Appendix J) allows any link to be overlaid by one or more terrain segments, which describe the type and width of terrain along the link. Segments of a link are defined sequentially along the link, starting from the first place named. The length of a segment can be given as the percentage of the total link length or a number of kilometers. There are six JICM terrain types: urban, mountain, rough, open, mixed, and river, which can be displayed on the JICM Map where defined, as shown above.
The syntax for specifying a position on the surface network is either exactly at a place (e.g., “Seoul”) or between places (e.g., “Washington/52.8Kms/Richmond”, meaning 52.8 kilometers away from Washington along the link to Richmond). The abbreviation “Kms” is optional. If the link crosses a border, the word “border” can be used instead of a kilometer distance to specify a position at the border (e.g., Boston/border/Quebec). Distances are recorded only to the nearest tenth of a kilometer.

For convenience, specific positions can be named using the LOC->location script, and those names can be substituted in any order that requires a network position. For example, the positions of fixed defenses could be named and used in deployment orders. The locations of the two sides of the Korean DMZ are named in the Env use file “korea.geog.”

Additionally, paths through the network can be named using the LOC->path script and used in orders instead of explicit paths. They are commonly used to set up the lines of communication or axes through a theater that define the plan for strategic maneuver. The axes used in the Korean scenario provided with JICM 1.0, shown on the next slide, are defined in the Env use file “korea.geog”. The name of both the position and path must be unique across the database.
This slide shows the named paths (boldface lines) defined for the Korean scenario provided with JICM 1.0. The paths are defined by scripts found in the Env directory use file "korea.geog".

The paths, named "axis.1" through "axis.6", freely cross and overlay each other. Each path has a direction associated with it (from the first place to the last place named in the path definition). Placing a minus sign in front of the path name (e.g., -axis.1) reverses the direction on the path.
2. ITM Ground Combat—Ground Forces

We now turn to ground forces.
Classification of Ground Forces

- Unit
  - defined in ground.sec
  - 23-ARMD
  - 3-ARMD/256-MXB

- Type
  - defined in ground.sec
  - US_armd, ARMD, TKD...

- Class
  - built-in
  - Armor, Mech, Infantry, Aircavalry (attack helicopter), Airmobile, Airborne, Arty,
    Amphib, Security, SOF, CSS

As in previous JICM releases, ground forces are represented at the level of divisions and independent brigades. The model can accommodate other types of units, and they are included where they play a potentially critical role. Thus, tank or artillery divisions, independent helicopter regiments, and air-assault brigades are often represented. Other corps or army subordinated assets, such as air-defense and artillery units of brigade size or smaller, will often have their assets aggregated into corps- or army-level combat units. In a few cases, divisions must be divided into smaller units, either because they include an active/reserve mix (e.g., U.S. divisions with round-out brigades) or because they would likely be employed in less than divisional increments (e.g., Russian airborne divisions might be split into regiments).

Ground units are identified by name, which consists of a number or name, a "-", and a unit-type designation, for example "23-ARMD". JICM 1.0 includes a notation standard for establishing the unit-type designation, and this standard is reflected in the ground.sec data file. It involves designating the type and size of a unit. Types are designated in 1 to 3 capitalized letters (for example, armored forces are designated "ARM", mechanized forces are designated "MX", and infantry forces are designated "I". The size of the unit is designated by a single capitalized letter, where "D" means division, "B" means brigade, and "N" means battalion. Thus an "IB" is an infantry brigade, whereas an "ID" is an infantry division. This standard is documented in the ITM design documents distributed to the JICM Working Group; it was instituted to overcome some confusion in the character of individual units in previous JICM versions.

Many units are grouped as sister units under a parent organization, such as a corps, army, or division. If so, the parent's name and the unit's name follow the same naming convention. The parent's name precedes the unit's name, separated by a "/", as in 3-ARMD/256-MXB. The ground order-of-battle data are in the ground forces table in the ground.sec data file.
Each type of ground force is defined (in the type table) in data file ground.sec, and new types can be added by the analyst. Force readiness and deployment data are associated with the unit type and are also described in this file.

Each ground force type is also defined to be a member of a broad class according to how it is used in the model. These classes cannot be changed by the analyst. Some orders can be given collectively to these classes of forces within a region or owned by a particular owner (e.g., all South Korean mechanized units could be alerted).
Unit Characteristics

- Name and owner
- Type
- Equipment in 14 categories
  - inventory and score
- Equivalent division (ED) score
- Assigned command and mission
- Mobilization, alert, training, and cohesion levels (0-100%)
- Combined effectiveness multiplier
- Position on network
- Days of supply

This display lists most data kept for a ground unit. As pointed out earlier, each individual unit is described in the ground forces table in the data file ground.sec.

Original inventory, current inventory, and the score of weapons are carried in each of 14 categories. The JICM is using a new, RAND-developed scoring system described in Bruce W. Bennett, “Evaluating the Capabilities of Ground Forces in the Evolving World,” unpublished draft. For display purposes, the equipment score, excluding air defense and attack helicopters, is totalled and converted to an equivalent division (ED) score, where 1.0 ED is defined as the value of the 1990 U.S. 1st Armored Division, without a slice of corps combat assets.

Mobilization, alert state, training level, and combat cohesion are described in percentages. Alert represents the degree to which the unit is deployed for combat, and cohesion represents the unit’s ability to fight as a coordinated unit. These factors and others, including parameters set by the analyst, are combined into a single effectiveness multiplier for the unit.

Position is a standard network location—either a place (e.g., Seoul) or a distance along a link from one place to another (e.g., Seoul/24kms/Kuhwa).
### Unit Equipment Categories

<table>
<thead>
<tr>
<th>Armor</th>
<th>Artillery</th>
<th>Artillery</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Tanks</td>
<td>- Self-propelled</td>
<td>Towed</td>
</tr>
<tr>
<td>- Anti-armor IFV/APC</td>
<td>- Towed</td>
<td></td>
</tr>
<tr>
<td>- Other anti-armor armor</td>
<td>- Attack Helicopters</td>
<td></td>
</tr>
<tr>
<td>- Other APCs</td>
<td>- Air Defense</td>
<td></td>
</tr>
<tr>
<td>- Other armor</td>
<td>- Radar homing</td>
<td>Optical/IR homing</td>
</tr>
<tr>
<td>- Small arms</td>
<td>- Optional</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infantry</th>
<th>Optional</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Long-range anti-armor</td>
<td>- Long-range Artillery</td>
<td></td>
</tr>
<tr>
<td>- Short-range anti-armor</td>
<td>- MRLS, ATACMS</td>
<td></td>
</tr>
<tr>
<td>- Mortars</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Small arms</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These weapon categories were developed with colleagues at RAND and the JICM Working Group to represent most of the significant differences in roles for which ground combat weapons are defined:

**Tanks**--All medium and heavy tanks (e.g., M1-A1 or T-80)

**Anti-armor IFV/APC**--All armored infantry carriers with an anti-armor capability (e.g., BMP or Bradley)

**Other anti-armor armor**--All other armored vehicles (including ARVs and anti-armor vehicles) with an anti-armor capability (e.g., ITV, BRDM with AT-3, or PT-76)

**Other APCs**--Armored infantry carriers without an anti-armor capability (e.g., M-113 or BTR-50)

**Other armor vehicles**--Other armored vehicles without an anti-armor capability (e.g., ARVs such as the Ferret)

**Long-range anti-armor**--Long-range anti-armor systems carried by infantry, mounted on light vehicles, or towed (e.g., man pack TOW, AT-3, or anti-tank guns)

**Short-range anti-armor**--Short-range anti-armor system (e.g., LAWs, Dragon, and recoilless rifles)

**Mortars**--Mortars under 100 mm

**Small arms**--Rifles, machine guns, and similar weapons carried by combat infantry forces

**SP artillery**--Self-propelled artillery, and mortars over 100 mm (e.g., MLRS or M-109)

**Towed artillery**--Towed artillery and mortars over 100 mm (e.g., M-114 or D-30)

**Attack helicopters**--Helicopters with a primary anti-armor or indirect-fire mission (e.g., AH-64 or Hind)

**Radar homing air defense**--Organic air-defense systems with radar homing (e.g., SA-8 or Roland)

**Optical/IR homing air defense**--Organic air-defense systems requiring optical sighting and/or IR homing (e.g., Stinger or Vulcan)

**Long-range artillery**--Up to two user-defined systems that are adjudicated in a similar way to CAS, BAI, and attack helicopters (e.g., ATACMS).
Unit Effectiveness Accounts for Personnel and Leadership Factors

**EEDs (Effective EDs) = EDs x Effectiveness multiplier**

**Effectiveness multiplier =**

- Mobilization level (25% minimum)
- x Alert level (50% minimum)
- x Training level
- x Cohesion factor
- x Supply factor (based on days of supply on hand)
- x Parameter multipliers (next slide)

In ITM, the strength of ground forces is measured in terms of the equipment held by each unit, personnel and leadership factors, and combat situational factors. A unit’s effective strength, or Effective Equivalent Divisions (EED) score, is derived by multiplying its equipment score in EDs by a number of personnel/leadership factors. Those factors reflect the current readiness of the unit and effectiveness multipliers set by the analyst through parameters described in the next slide.

The supply of a unit is measured in days of supply at the normal rate of consumption. It is covered in detail in the logistics portion of Section 5. The effectiveness multiplier derived from days of supply on hand is as follows:

<table>
<thead>
<tr>
<th>days</th>
<th>multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0+</td>
<td>1.0</td>
</tr>
<tr>
<td>1.0-1.99</td>
<td>0.67</td>
</tr>
<tr>
<td>0.5-0.99</td>
<td>0.5</td>
</tr>
<tr>
<td>0.25-0.49</td>
<td>0.1</td>
</tr>
<tr>
<td>0.15-0.24</td>
<td>0.05</td>
</tr>
<tr>
<td>0-0.14</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Currently, these factors cannot be changed.

The cohesion factor is discussed on page 15.
Effectiveness Parameters

UNIT->effective - effectiveness multiplier for an individual unit

CMDGOV->gnd_mult - multiplier of all ground forces of the command or owner
CMDGOV->comb_mult - multiplier if in a command with another owner's units
CMDGOV->home_mult - multiplier when fighting in home region(s)
CMDGOV->cntr_battly, cntr_mnvr - multiplier of arty counter-battery fire or counter-maneuver fire
CMDGOV->armr_mult, infty_mult, arty_mult, helo_mult, adef_mult - multiplier of these individual equipment components

LANDWAR->chemical, surprise - multipliers that linearly return to 1.0 over a set time

ITM->overrun_mult - multiplier if unit is overrun
ITM->shock_mult, shock_hours - multiplier when first contacted on flank or rear; returns to 1.0 over shock-hours

These are the parameters through which the analyst can vary the personnel and leadership factors in ground force effectiveness. These multipliers must be used with caution because their effects compound. Thus, the baseline for any given analysis might use values of 1.0 for many of the more subjective factors (such as national fighting effectiveness, fighting on home territory, and combined-operations effectiveness), and modest factors for the others. The analyst should then sensitivity-test the range of multipliers and examine their effect on unit value in some detail (looking at issues such as how the model employs a unit, and not simply looking at combat outcomes) when multiple factors are allowed to vary from a value of one. In the end, the analyst must strike a balance between the compounding effects of multipliers, rather than understating (or ignoring) the implications of personnel and situational factors, which in many historical cases have proven highly significant.
### Unit Cohesion Measures
**Ability to Fight as a Coordinated Unit**

<table>
<thead>
<tr>
<th>Cohesion level = attrition-factor x training-factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>attrition-factor: starts at 1.0</td>
</tr>
<tr>
<td>reduced by percentage combat losses</td>
</tr>
<tr>
<td>recovered at rate set by MATERIEL-&gt;days_recover</td>
</tr>
<tr>
<td>training-factor: ((1 + \text{training-level}) / 2)</td>
</tr>
<tr>
<td>FORCE-&gt;no_tng turns off</td>
</tr>
</tbody>
</table>

**Cohesion multiplier of effectiveness =**

- 1.0 if cohesion-level > ITM->coh_curve_factor (default 0.8)
- or cohesion-level / ITM->coh_curve_factor

---

In ITM, unit cohesion is a number from 0 to 1.0 that is a combination of factors for attrition and training. While the unit is in combat, the attrition factor is reduced by the same percentage as the unit’s equipment losses. While out of combat, it is recovered at a rate set by the parameter MATERIEL->days_recover. This recovery is not related to the unit’s repair or reissue of equipment losses, although a separate equipment recovery procedure exists. The training factor varies from 1.0 to 0.5 as the training level falls.

Loss of cohesion does not immediately reduce unit effectiveness. The parameter ITM->coh_curve_factor sets the level of cohesion at which the calculated effectiveness multiplier begins to fall below 1.0. This level is 0.8 (or 80% cohesion) by default.

The effect of training on cohesion is not considered if the parameter FORCE->no_tng is set.
Unit Display
Lists individual ground forces

cmd-or-owner location
display unit ground CFCK SKorea

SKorea Ground Forces in SKorea as of 12:00 GMT, day 3

<table>
<thead>
<tr>
<th>Name of Unit</th>
<th>Readiness</th>
<th>Command</th>
<th>Location</th>
<th>Enroute</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAP-DEF/1-SPT</td>
<td>100% 100% 0.04 0.02</td>
<td>KS-1</td>
<td>Seoul</td>
<td></td>
</tr>
<tr>
<td>CAP-DEF/52-HED</td>
<td>100% 34% 0.22 0.02</td>
<td>KS-1</td>
<td>Seoul</td>
<td>Uijongbu</td>
</tr>
<tr>
<td>CAP-DEF/56-HED</td>
<td>100% 34% 0.29 0.03</td>
<td>KS-1</td>
<td>Seoul</td>
<td>Seoul</td>
</tr>
<tr>
<td>CAP-DEF/57-HED</td>
<td>100% 34% 0.29 0.03</td>
<td>KS-1</td>
<td>Seoul</td>
<td>Uijongbu</td>
</tr>
<tr>
<td>CAP-DEF/60-HEE</td>
<td>54% 54% 0.24 0.05</td>
<td>KS-1</td>
<td>Seoul</td>
<td>Seoul</td>
</tr>
<tr>
<td>CAP-DEF/71-HED</td>
<td>100% 54% 0.24 0.05</td>
<td>KS-1</td>
<td>Uijongbu</td>
<td></td>
</tr>
<tr>
<td>1-CORPS/1-ID</td>
<td>99% 100% 0.02 0.01</td>
<td>KS-1W</td>
<td>Seoul</td>
<td>Munseon</td>
</tr>
<tr>
<td>1-CORPS/9-ID</td>
<td>100% 100% 0.28 0.28</td>
<td>KS-1W</td>
<td>Munseon</td>
<td></td>
</tr>
<tr>
<td>1-CORPS/25-ID</td>
<td>99% 100% 0.27 0.27</td>
<td>KS-1W</td>
<td>Pyeonghe</td>
<td></td>
</tr>
<tr>
<td>1-CORPS/38-ID</td>
<td>99% 100% 0.17 0.17</td>
<td>KS-1O</td>
<td>Uijongbu</td>
<td></td>
</tr>
<tr>
<td>1-CORPS/101-ID</td>
<td>99% 100% 0.28 0.28</td>
<td>KS-1E</td>
<td>Yonchon</td>
<td></td>
</tr>
</tbody>
</table>

The unit display lists the name of units for a specified owner or assigned command, and a specified region. A "-" in either field means no restriction.

Equipment strength is expressed as a percentage of original aggregate inventory.

"Location" is the nearest place on the network, and "Enroute" shows the nearest place to the destination of the unit if the unit is moving.
The find display includes details of an individual unit’s readiness, equipment strength, and various effectiveness factors.

All multipliers of the unit’s effectiveness (either parameter or calculated) that are not 1.0 are listed after the heading “Current Effectiveness Multipliers:”. Parameter names are preceded by their capitalized table name, either GND, CMD, GOV, or ITM. Following the list of individual factors is the total effectiveness multiplier for the unit, as well as multipliers for different subcategories of equipment used in the combat calculations.
Ground units engaged in combat are either organized into ground commands (explained below) or placed in positional defenses to defend a specific length of the network. The potential for allocation of a force between front, flank, and other battles is discussed in the next slide.

The front, reserve, flank, security, and reconstitute missions reflect the nominal position of the unit within its ground command and the types of contacts in which it is engaged.

The positional mission places a unit in static defenses over a specific length of the network, with limited movement allowed.

The support and strike missions direct the attacks of attack helicopters and long-range artillery and are covered in Section 4.
The front, reserve, flank, and security missions specify the role and position of the unit within its ground command. The reconstitute mission speeds the recovery of cohesion and makes a unit a priority for equipment replacement. By default, units assigned to a ground command have the reserve mission and are rotated between front, reserve, and reconstitute missions as required by the combat situation. An ITM module called the LoC Commander makes these decisions based on analyst guidance. The GndMission order overrides the LoC Commander.

The GndMission order sets the mission for a ground force (and any child units) specified by name and owner. The "set" field implements the new mission instantly, as long as the unit is within its assigned command, while a "-" allows the unit to move to its new position normally. The "trrn [terrain]" type specification is intended to deal with terrain that is of mixed type on a given LoC segment (e.g., a valley with mountains on either side); because this terrain option is not implemented in JICM 1.0, this entry is ignored. The "attr [attrition]", "obj [objective]", and "day" fields specify conditions under which the mission will be aborted (reverting to the reserve mission). The reconstitute mission does not have attrition and objective abort conditions.
GndMission Order
For positional defense mission

<table>
<thead>
<tr>
<th>cmd</th>
<th>mission</th>
<th>unit</th>
<th>owner</th>
<th>orientation</th>
<th>trrn</th>
<th>spd</th>
</tr>
</thead>
<tbody>
<tr>
<td>order</td>
<td>CPCK gndmis</td>
<td>position</td>
<td>2-MXD SKor</td>
<td>-(30)axis.1{(3dmz.1)}</td>
<td>-</td>
<td>5</td>
</tr>
</tbody>
</table>

- orientation consists of [-]{(length)}path(front)
- (optional) reverse direction
- length (optional) km length
- path explicit (seoul->kimpo...) or named path (axis.5W)
- front position of command's front (place or place/kms/place)
- trrn terrain to operate in when available, or '-'
- spd km/day speed unit can be pushed back by attack

- Orients a unit of limited mobility to defend a specific position on the network

The concept of positional ground force units reflects the fact that in many parts of the world, ground combat units have very limited mobility and are essentially assigned to defend a given piece of terrain (and not to fall back when pressed by an attacker, as in the former Central European paradigm). While units in positional defenses do not advance, they may move backwards if pressed, up to a specified rate per day (which may be zero), reflecting the mobility of the unit and its intended employment. If an attacker advances past the rear of a defending positional unit, the positional unit is assumed to continue to survive in the rear area of the attacker, although it will have less cohesion and will incur an attrition penalty for being overrun. The attacker must then allocate some of its forces to isolating and “mopping up” the enemy force in its rear; the enemy force continues to fight until it reaches a level of strength that is insufficient for it to continue to exist.

The “trrn [terrain]” field specifies a required terrain type (but is not used in JICM 1.0). The “spd [speed]” field is the number of kilometers per day (KPD) that the unit can move its position to the rear.
Deploy Order
Moving all units to their default destinations

<table>
<thead>
<tr>
<th>cmd</th>
<th>class</th>
<th>origin</th>
<th>owner</th>
<th>subcmd</th>
<th>#/%</th>
<th>dest</th>
<th>modes</th>
</tr>
</thead>
<tbody>
<tr>
<td>order</td>
<td>CFCK</td>
<td>deploy</td>
<td>troops</td>
<td>SKorea</td>
<td>-</td>
<td>-</td>
<td>100%</td>
</tr>
</tbody>
</table>

- *Order all units to deploy to their logical destinations*
  - to their assigned command if oriented
  - to their position if given a positional mission

The Deploy order has many forms and options, and is used to deploy all types of forces both in-theater and around the globe. In many scenarios, the only in-theater deployment necessary will be that of all units to their forward positions prior to D-day. This is accomplished by the single order illustrated by this slide, which deploys all units of the class *troops* (all ground units) in South Korea to their default destinations. The default destination of a unit is its assigned command, if that command is oriented on the ground network, or a network position if the command has been given a positional defense mission with the GndMission order.

In general, units are assigned to commands and given positional defense missions individually, then this single order is given to deploy all units of the theater command in the region. As other units arrive in the theater and are given assignments and missions, this order can be safely repeated, because it does not affect units that are already at their default destinations.
### Deploy Order

Moving individual units on the network

<table>
<thead>
<tr>
<th>govr</th>
<th>name</th>
<th>route</th>
<th>destination</th>
<th>mode/mode/....</th>
</tr>
</thead>
<tbody>
<tr>
<td>order US deploy 1-MXD Taejon&gt;rail&gt;Seoul dos=N/day5:0000z</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **route**
  - **place**
  - **instruction**
  - **destination**
  - **position**
  - **command**

- **mode**
  - **dayX, HRMMNs**
  - **dos=N**
  - **cmd=xxx**

- network place through which to route assisted, rail, administrative, tactical
- network place
- network position
- to an oriented command
- default destination
- earliest departure time
- days of supply to move with
- reassign unit before deployment

Another form of the Deploy order moves individual units on specific routes through the ground network. In this form, the destination can be preceded by a sequence of places and instructions, separated by "\">", that form a route through the network. The instructions pertaining to in-theater movement specify the mode of transportation taken to reach the next place in the sequence. In the illustration on the slide, the unit will deploy to Taejon using its default mode of transportation, then deploy to Seoul using the rail speed.

The final destination, the last item in the sequence, can be a place, position between places, or the name of an oriented command. When deploying to a command, the unit will follow the command if the command moves while the unit is deploying.

Units with a positional defense mission must be deployed using a dash as their destination, which deploys them to their default destination, the position specified in their mission. Any other destination will cancel the mission (even the same position given in the mission).

The mode field also has many options, more than one of which can be given if separated by "\>/". The three options pertaining to in-theater movement are shown in the slide.
Types of Commands

- **Theater** - defines a combat theater
  - required superior for air, ground commands
- **Ground** - organizes ground forces for combat
  - Mobile: normal attack and defense missions
  - Positional: organizes arty support of forces in positional defenses
- **Air** - organizes air forces for combat
- **Sea** - naval command
- **Lift** - strategic lift may be assigned

In general, forces are assigned to commands so that they can be organized for warfighting. Commands are arranged in a hierarchy, from theater commands, such as CFCK (Combined Forces Command, Korea), to a command covering a single corps sector or less. Each command can be one or more of the above types, each handling different forces within the JICM.

Ground and air commands are the warfighting commands in the ITM. A ground command has a length and position (orientation) on the surface network, and organizes the forces assigned to it for combat, according to its assigned mission. Mobile ground commands have attack and defend missions and move freely on the network as combat is adjudicated. A command with a positional mission covers units in positional defenses and organizes the employment of assigned independent artillery units.

Air commands are discussed in other documentation. A command may be both a ground command and an air command, for instance a command representing a Marine Expeditionary Force (MEF). Such a command could have both air and ground units assigned and would accept both air and ground orders.

Commands are defined in the data file command.sec, except that a ground command is made mobile or positional by the orders given it during a run.
This slide diagrams the default hierarchy of commands in South Korea, as defined in the data file command.sec. CFCK is the theater command in South Korea. Any of the commands without subordinates could be oriented on the network to fight, but only the underlined commands are oriented in the Korean scenario provided. Because of the limited mobility of the forward South Korean forces, most of these commands are positional.
This slide diagrams the default hierarchy of commands in North Korea, as defined in the data file `command.sec`. DPRK is the theater command in North Korea. All commands shown here under DPRK are ground commands, but only the underlined commands are oriented in the Korean scenario provided. Some of these commands are actually echeloned behind others in the Korean scenario provided and do not have an independent orientation.
The cmd (command) ground display may be used to obtain a summary of the ground forces assigned to any command, or owned by any government, or located in any region. A command, owner, or region can be specified to restrict the forces displayed, or a "-" can be entered for unrestricted.

The “Days When Ready” column estimates the mobilization and training time required within 20-day increments (e.g., 1–20, 20–40).

The “Surviving Divs” column gives the number of divisions of that type, from the definition of the class in ground.sec. A brigade is counted as 0.33 division; for some force classes, this number may be artificial.
Ground Commands are Oriented on the Network

- Represented by arrow on map
  - MOFL Most Forward Line
  - CONL Control Line (same as MOFL in JICM 1.0)
  - CBTZ rear of Combat Zone

- Mobile command's initial orientation specified by `orient` script

  - COMMAND->orient

- Positional command's orientation covers all assigned forces in positional defenses on specified LoC

  - made positional by assigning *positional* mission

Ground commands that are going to enter combat are positioned (or oriented) on the network, and are represented on the JICM Map by an arrow.

Ground commands are characterized by three positions:

- **MOFL**—the most forward position of any forces, represented by the tip of the arrow.

- **CONL**—the position behind which it has more complete control (enemy forces behind this line are overrun or inserted). In JICM 1.0, the CONL is always at the same position as the MOFL. In future work we hope to allow them to separate to represent the dynamics of non-linear battlefields.

- **CBTZ**—the rearmost end of the command (or combat zone).

Mobile commands (those that will not be given a positional mission) must be given an initial orientation on the network through the COMMAND->orient script described in Appendix K.

The orientation of a positional command is determined each adjudication period by ITM so as to cover all assigned forces in positional defenses. On the JICM Map graphic display, the arrow of a positional command has a cross bar at the rear.
Ground units that are within their assigned command’s orientation on the network automatically take up position within the command according to their own mission. Frontal units stay at the command’s nose; reserve, flank, and security units stay between the parameter limits, moving only when required to minimize exposure to air attack. Reconstituting units of the attacker are dropped off at places in order to secure the flank approaches to the command, while those of the defender move backward with the reserve. The parameter ITM->place-value lets the analyst rank places for the attacker’s reconstituting units; otherwise, the most recently overrun place is chosen.
The position of a unit in positional defenses is shown on the JICM Map as a sausage shape. A positional command is automatically drawn to cover all assigned units in positional defenses (which is the only mission allowed these units) along the path of the positional command, even if a unit is overrun by an enemy command.

Units in positional defenses move only when pushed back by an enemy command. However, independent artillery units (Arty class) assigned to the command are assumed to be supporting the frontal battle. This support is provided only if the positional forces are organized in a positional command; otherwise, the artillery unit would fire only when the enemy command moved within range of its actual position.

When the frontmost positional defender is overrun, a parameter-designated percentage of its artillery is transferred to the supporting command’s artillery unit (if one exists), and a percentage of the artillery from supporting artillery units is lost (destroyed) with that unit.
Orient Mobile Commands

Orient a command on the network

<table>
<thead>
<tr>
<th>cmd</th>
<th>orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>set command orient KS-5W -(30)axis.4W(Seoul.4W)</td>
<td></td>
</tr>
</tbody>
</table>

- orientation consists of [-][(length)]path(front) (optional) reverse direction
- length (optional) km length
- path explicit (Seoul-Kimpo...) or named path (axis.5W)
- front position of command's front (place or place/kms/place)

Echelon a command behind a sister command

<table>
<thead>
<tr>
<th>command</th>
<th>rear-cmd</th>
<th>fwd-cmd</th>
<th>commit-pos</th>
</tr>
</thead>
<tbody>
<tr>
<td>order DPRK echelon KN-7 KN-5C Kalmal commit-pos position where rear-cmd forces available as reserve</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A command is initially positioned on the network with either the orient script or the Echelon order. The "orient" script specifies the position of the command's front, its length, the path through the network along which it lies, and the direction along the path it faces (a path's direction goes from left to right along its list of places). Only ground commands with no subordinate commands may be oriented.

An "echeloned" command follows behind another command and is available as reserves for that command when a specified position on the network is reached. The echeloned command is not shown on the JICM Map, but its name is stacked behind the name of the forward command. Only sister commands, that is, commands that have the same direct superior in the command hierarchy, can be echeloned. The echeloned command must not be oriented: It will share the orientation of the command behind which it is echeloned.
# Ground Command Missions

<table>
<thead>
<tr>
<th>Mission</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main-attack</td>
<td>high intensity</td>
</tr>
<tr>
<td>Support-attack</td>
<td>low intensity</td>
</tr>
<tr>
<td>Pin-attack</td>
<td></td>
</tr>
<tr>
<td>Defend</td>
<td>delay outside fixed defenses</td>
</tr>
<tr>
<td>Defend-delay</td>
<td>withdraw outside fixed defenses</td>
</tr>
<tr>
<td>Defend-withdraw</td>
<td></td>
</tr>
<tr>
<td>Delay</td>
<td></td>
</tr>
<tr>
<td>Withdraw</td>
<td></td>
</tr>
<tr>
<td>Follow</td>
<td>follow a command at set distance</td>
</tr>
<tr>
<td>Join-attack</td>
<td>attack toward a friendly command to envelop</td>
</tr>
<tr>
<td>Positional</td>
<td>assigned units are all in positional defenses</td>
</tr>
</tbody>
</table>

The *mission* of a command directs how it operates over the theater network. The three attack missions characterize the intensity of the attack, which affects the combat loss and movement rates, and supply consumption rates. The parameters setting these effects are given on following slides. There is no restriction on how these or the other missions can be assigned to commands.

The five defense missions specify how rapidly ground is yielded and how to use fixed defenses. The defend-delay mission switches to delay when the command is not in fixed defenses, and the defend-withdraw mission switches to withdraw under the same conditions. The delay and withdraw lead to higher movement rates but lower the fraction of the defender that is engaged and lower vulnerability to breakthroughs.

Other missions that have been defined but await future implementation are Air-drop, Air-assault, Pass-thru, Penetrate, and Break-out.
The "CmdMission" order assigns a mission to a command. The normal attack and defense missions require the specification of a route to follow, the number of divisions to employ at the front, and abort conditions similar to those for the unit missions.

The route will generally be a named path predefined in the scenario with the LOC->path script, explained earlier. Both an initial position and a final objective, at which the command will halt, can also be specified.
**CmdMission Order**

*For special missions*

### Follow, Join-attack:

<table>
<thead>
<tr>
<th>command</th>
<th>mission</th>
<th>command</th>
<th>dive</th>
<th>attr</th>
<th>day</th>
</tr>
</thead>
<tbody>
<tr>
<td>KN-8</td>
<td>cmdmis</td>
<td>follow</td>
<td></td>
<td>KN-5C</td>
<td>5</td>
</tr>
</tbody>
</table>

- `command`: command to join
- `command@km`: command to follow; optionally specifies kms distance

### Positional:

<table>
<thead>
<tr>
<th>command</th>
<th>mission</th>
<th>path</th>
</tr>
</thead>
<tbody>
<tr>
<td>KS-5C</td>
<td>cmdmis</td>
<td>positional</td>
</tr>
</tbody>
</table>

- `path`: path along which all positional forces are dug-in

The special missions Follow, Join-attack, and Positional require somewhat different formats of the CmdMission order.

Instead of specifying a route, the Follow and Join-attack missions specify a target command to follow or attack toward.

The Positional mission specifies a path along which its assigned units are in positional defenses. The command is then automatically oriented to cover these units.
The call-plan facility is a useful way to create conditional branches within the use files that control a scenario. This order specifies a use file to be run when a specified ground command advances or withdraws to a specified position. This capability is commonly used to force a change of mission or commit reserve forces. Note that the orders in the use file will be executed at the exact time the ground position is attained, even if this time is within a 4-hour adjudication period.
The itm-land display details the orientation, mission, contacts with enemy forces, and own forces of a ground command. If the initial letter of the display name is capitalized (Itm-land), the position and strength of each of the assigned units are also listed.
3. ITM Ground Combat—Ground Combat

We turn now to a discussion of ground combat.
The ITM adjudicates battles wherever ground commands contact ground commands or units. Each contact falls into one of five types: Front, Flank, Rear, Internal, and out-of-contact artillery fire (Arty). Internal battles occur only when a unit is overrun. Artillery battles occur only when a command that is not involved in maneuver combat comes within range of a force with artillery, typically only in the opening hours of a war. Otherwise, the out-of-contact artillery is added to the front battle before it.

Where overlapping commands or positional units are contacted at a single place, a single battle is adjudicated for all forces contacted. Each command or positional unit is allowed to be in only one battle at each type of contact. If contacted by two enemy commands in the flank at different positions, only one battle would be adjudicated for all forces.
A unit within a command initially fights in the contact corresponding to its mission, which also determines its position within the command.

One exception is the artillery units (class Arty) in reserve, which fight in frontal battles as shoulder space allows. *Shoulder space* is the average military width of the terrain. Also, an ITM module called the Battle Allocator can shift fractions of the forces in each position to meet threats from other directions. That module is explained in Section 5.
The battle display details the battles that occurred during the past period at one type of contact for a command. More than one battle may occur at the contact in a single adjudication period (or delta) if the list of participants, the type of terrain, or any of a number of significant inputs changes during the period. In this case, the battle display will list a separate chart for each battle and indicate the precise time period (or sub-delta) covered by each battle.

The display highlights the ground adjudication process, covering the combat situation and calculation of scores, losses, and MOFL movement. EEDs (Effective Equivalent Divisions) are derived from the ED scores by applying unit effectiveness and cohesion factors. SEDs (Situational EDs) also apply terrain and type-of-battle factors, and TEDs (Tactical EDs) apply combined-arms shortage factors.

Each of the sections of this display is discussed in turn to illustrate the ground combat process.
The precise starting and ending times covered by this display are listed in the first line, and the corresponding decimal hours, in the fifth line. The parameter LANDWAR->gnd_timing specifies the percentage of effort that is put into ground combat in each period of the day. The percentage here shows how much of its daily effort the attacker is expending in the time covered. The defender is assumed to match the attacker’s effort.

The list of participants shows either commands or positional units by name, and where they are contacted for this battle.

The battles part of ITM is event-driven within an established time period (the ITM “Delta-T”), which is 4 hours. For each battle across the front, the time of the next discontinuous event (e.g., terrain shift or the encounter of an opposing force) is determined, and the clock is advanced only to the closest of these events. The resulting period of time is referred to as a “Sub-Delta.” If in a given sector the time division is not required, ITM aggregates the battle results from multiple Sub-Deltas; in this case, two such periods were combined.
The second step in ground combat adjudication is to characterize the type of battle and the posture of each side.

A strategy is chosen for each side, based on the type of contact, the assigned mission, the level of defenses, and other factors. For instance, in a front contact a defender with a defend-delay mission will defend if in fixed defenses, but will delay otherwise. In a flank contact, both sides always choose attack because the defender is inherently out of position. The three attack missions (main, support, and pin) all result in a strategy of Attack. Their difference is reflected in a separate intensity factor (high, medium, or low, respectively) that adjusts the calculated combat rates.

The battle type is determined from the choice of strategy on each side. The normal choice of attack and defend strategies leads to an assault battle, whereas the choice of both to attack, as in a flank contact, leads to a meeting battle. The battle type is overridden in two cases. It becomes static if the attacker-to-defender TED force ratio (explained later in this section) is below what is required to attack (parameters LANDWAR->attk_main/pin/spt/join). It becomes a breakthrough if the defender SED density falls below requirements described on the next slide.

Finally, each side's posture is determined from the type of battle and the level of defenses.
Breakthroughs Represent Catastrophic Failure of the Defense

- Occur when defender SED/km density falls below a threshold
  - LANDWAR->brk_density, delay_density, withd_thresholds density thresholds in normal assault, delay, and withdrawal
- If the attacker does not have a minimum density, also require a minimum force ratio
  - LANDWAR->brk_ratio - required force ratio to breakthrough
  - required attacker density = required defender density x brk-ratio
- Recover when defender density is above a threshold, or enter defenses
  - LANDWAR->recvr_density
- 5% (default) one-time loss for suffering a breakthrough
  - LANDWAR->brk_loss, barrier_loss - % loss on breakthrough, or when pushed out of barrier defenses
  - LANDWAR->brk_ex_ratio - exchange ratio to calculate attacker loss

A breakthrough is adjudicated in the ITM when the defender must cover more combat-usable frontage per SED than is feasible, rather than being treated as a stochastic event as would occur in the real world. In addition, the attacker must be able to sufficiently cover the frontage, or the breakthrough adjudication turns more on firepower and maneuver than on density, and the attacker must satisfy an additional force-ratio constraint.

When a breakthrough does occur, there are two procedures for capturing its effects. First, a one-time attrition penalty is assessed to the defender (LANDWAR->brk_loss) to reflect the results of local encirclements and collapses associated with the breakthrough that, in reality, would occur over many hours or days, but are adjudicated within a single 4-hour time step for simplicity. Second, the type of battle is changed to breakthrough, implying an exploitation phase has begun with appropriately high defender losses and a lower exchange ratio for the attacker; this phase continues until the defense is able to establish a cohesive line of defense again (assessed when the defense-capable forces at the front cover no more frontage than LANDWAR->recvr_density per SED, or the defender falls back into fixed defenses).

An alternative kind of breakthrough occurs when a defender is pushed out of a prepared defensive position. This kind of breakthrough causes a one-time attrition to the defender (LANDWAR->barrier_loss) but does not transition to a breakthrough type of battle.
Frontage Restrictions Limit the Weapons Engaged

<table>
<thead>
<tr>
<th>Attack</th>
<th>Armor</th>
<th>Inf</th>
<th>Arty</th>
<th>Armor</th>
<th>Inf</th>
<th>Arty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Wpn</td>
<td>362 11403 1332</td>
<td>25 3209 217</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Km Avail</td>
<td>6.0 3.6 9.6</td>
<td>6.0 9.6 9.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Used</td>
<td>126% 119% 116%</td>
<td>10% 13% 19%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Forward</td>
<td>33% 30% 14%</td>
<td>100% 100% 100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Engaged</td>
<td>31% 50% 14%</td>
<td>100% 100% 100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total weapon count for each arm of all engaged units
Width available for each arm varies by terrain type
% of available width used
% able to keep up with MOFL movement
% of total weapons engaged, given above constraints

Parameters

ITM-armor_per_km, inf_per_km, arty_per_km - maximum # of weapons per km of terrain width that can engage
ITM-piecemeal - % of an overrun unit that is engaged
LANDWAR-delay_pct, withd_pct - maximum % of forces engaged in delay or withdraw
LANDWAR-armor_min_fwd, infty_min_fwd, arty_min_fwd - minimum # of weapons that can keep up with a rapidly moving MOFL

In calculating the combat power of each side, the forces in contact for each side are limited to what will fit on the usable terrain. The width and terrain type along each link were defined earlier in the scenario with the script LANDWAR->terrain. The single km width yields separate widths of usable terrain for the three types of arms (armor, infantry, and artillery) for different terrain types. For instance, in mountains, only 20% of the set width may be usable by armor, whereas 60% is available to infantry. The norms for the allowed weapons per km are set by the parameters ITM->armor_per_km, inf_per_km, and arty_per_km, to defaults appropriate to the Korean theater.

When the MOFL is moving rapidly, the forces of both sides will begin to string out along the road network in the theater. The number of weapons that can keep up with the fastest-moving MOFL is set by the parameters LANDWAR->armor_min_fwd, infty_min_fwd, and arty_min_fwd, to reflect the capacity of the road network. The percentage of total forces that can keep up is reported in the line “% forwr’d”.
Effective EDs Consider
Unit Effectiveness and Arty Suppression

<table>
<thead>
<tr>
<th>Attacker</th>
<th>Mvnr</th>
<th>Defender</th>
<th>Mvnr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank</td>
<td>IFV</td>
<td>APC</td>
<td>ARTM Inf</td>
</tr>
<tr>
<td>ED</td>
<td>0.10</td>
<td>0.09</td>
<td>0.05</td>
</tr>
<tr>
<td>Eng ED</td>
<td>0.03</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td>Eff X</td>
<td>0.96</td>
<td>0.92</td>
<td>0.98</td>
</tr>
<tr>
<td>Sprss X</td>
<td>0.95</td>
<td>0.95</td>
<td>0.95</td>
</tr>
<tr>
<td>EED</td>
<td>0.01</td>
<td>0.08</td>
<td>0.06</td>
</tr>
<tr>
<td>%mech</td>
<td>0.00</td>
<td>0.05</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Total EDs of all engaged units
Engaged EDs = Ttl ED x % engaged

Average effectiveness multiplier of all engaged units
cm, cb - arty split into counter-maneuver and counter-battery fire

Suppression multiplier from enemy arty
arty_vuln - relative vulnerability to arty
cm - % of own arty allocated to counter-maneuver fire
%mech - degree of mechanization of force

EED = Eng ED x EffX x SprssX (arty split into cntr_mnvrv and cntr_btry)

This section of the battle display reports the calculation of engaged Effective EDs (EEDs). Unit ED scores are aggregated into five categories and are totalled across the four maneuver categories.

The EDs of all forces in contact are limited to the percentage engaged, shown in the previous slide, and then are multiplied by the effectiveness calculated from a weighted average from the units in contact. The effectiveness multiplier for artillery is shown for counter-maneuver and counter-battery fire.

An additional multiplier is applied for the suppressive effects of the enemy artillery. This multiplier includes the vulnerability of the side to artillery (reported on the line above), which can range from 3.0 for attacking across a river to 0.5 for defending in fortifications, adjusted for the percent mechanization (reported on the last line). Percent mechanization is the percentage of the vehicles on hand relative to what would be required to completely mechanize the total force. Artillery vulnerability also multiplies losses from artillery fires.

Artillery EEDs are divided between counter-maneuver and counter-battery fire, by default, in proportion to the maneuver and artillery EDs of the enemy force (described in a later slide). The percentage allocated to counter-maneuver is reported in the Arty column of the “Sprss X” line, because artillery does not explicitly suppress artillery in the model.
### Situational EDs Consider
### Terrain, Battle Type, and Posture

<table>
<thead>
<tr>
<th>Attacker</th>
<th>Defender</th>
<th>Mvvr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task</td>
<td>IFV</td>
<td>APC</td>
</tr>
<tr>
<td>Rough</td>
<td>0.90</td>
<td>0.00</td>
</tr>
<tr>
<td>Assau</td>
<td>1.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Forti</td>
<td>0.90</td>
<td>1.17</td>
</tr>
<tr>
<td>SED</td>
<td>0.02</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Terrain multipliers

- Battle type multipliers
  - Including arty mult for days of preparation

Posture multipliers if in prepared or greater defenses

\[ SEDs = EEDs \times \text{Terrain} \times \text{Battle} \times \text{Posture} \times X \]

(arty split into cntr_mnvr and cntr_btry)

---

This section of the battle display reports the calculation of Situational EDs (SEDs), which are derived from EEDs by multiplying with factors for terrain, battle type, and level of defenses. A defender in deliberate defenses in mixed terrain is the nominal case, with factors of 1.0. Other factors reflect the usefulness of the weapon arm relative to the standard.

In general, as terrain becomes more difficult, armor and artillery do worse, and infantry does better. Attacking armor does better in pursuits than in assaults; attacking infantry and artillery do worse. All defending arms do worse in pursuit because of the lack of a cohesive defense. All defending arms do better in higher levels of defenses, with defending infantry doing the best and attacking arms tending to do worse (excepting short-range ATGMs).
This section of the battle display reports on the shortages of combined arms. ITM does this in two ways: (1) determining when the capability of a specific kind is insufficient, and (2) determining when a force's capability is insufficient relative to opposing capabilities. This assessment is done in three parts:

- Mapping categories of weapons into the three basic arms by platform and killing potential
- Determining whether or not a shortage exists in the weapon types or killing potential as a function of the combat situation
- Determining the multiplier associated with each shortage as a function of the combat situation.

The capability of the force in each arm is reported as Platform EDs (PEDs), and the capability against that arm as Anti-Platform EDs (APEDs). Each weapon can contribute to several categories. For instance, attacking tanks count 100% to armor and anti-armor capability, but also 80% to anti-infantry capability, and 30%, in breakthroughs only, to anti-artillery.

To prevent a shortage in an area, a force is required to have a certain density of PEDs, or ratio of APEDs to the corresponding enemy PEDs.

The analyst can modify these requirements through the parameter multipliers listed above.
This section of the battle display reports the calculation of Tactical EDs (TEDs), which are derived from SEDs by multiplying by factors for combined-arms shortages. A shortage in armor, infantry, or artillery capability results in a penalty to the other weapons, based on the size of the shortage (for example, insufficient artillery in an assault makes the attacking armor and infantry less effective). A shortage in killing capability (anti-armor, anti-infty, anti-arty) results in a bonus to the corresponding enemy weapons, also based on the size of the shortage.
Close-Combat Adjudication

- Defender loss rate and exchange rate calculated from attacker-to-defender TED force ratio
  - modified by intensity factors for battle type, defense level, attacker preparation
- Attacker losses are defender losses x exchange rate
- Loss distribution among weapon categories varies by battle type

Parameters
- LANDWAR->low_dldr, high_dldr - multiplier of defender loss rate at low/high intensity
- LANDWAR->low_er, high_er - multiplier of exchange rate at low/high intensity
- ITM->att_mult - multiplier of attrition from maneuver combat

Losses from close combat are calculated from the attacker-to-defender ratio of TEDs and are modified by factors for the intensity of combat. The defender’s loss rate and exchange rate of attackers for defenders are calculated directly; the attacker’s losses are simply the defender’s losses multiplied by the exchange rate.

This calculation results in an overall ED loss for each side, which is distributed among the weapons on each side according to a casualty distribution depending on battle type. In assaults, armor suffers more heavily than infantry, with the attacker’s armor suffering greater attrition than that of the defender.

The parameters listed above allow multiplication of the defender loss rate or exchange rate for each intensity of attack (missions Main-attack, Support-attack, and Pin-attack), or the multiplication of all close-combat attrition.
Adjudicating Direct-Support Artillery

- Kills based on standard TEDs per km of frontage
  - modified by the difference from standard arty TEDs and target density
  - varied for tank, other-armor, infantry, and arty targets
- Allocated against maneuver or artillery by one of:
  - proportion of enemy maneuver and arty EDs
    (weighted by LANDWAR->cntr_batt_wgt)
  - analyst (using LANDWAR->cntr_batt_pct)

Parameters
LANDWAR->arty_range_kms - kms from command's front that arty can engage
LANDWAR->init_art_prep - days of preparation for artillery at D-day
LANDWAR->cntr_batt_wgt - weight accorded enemy arty when allocating
LANDWAR->cntr_batt_pct - % of arty allocated against arty (overrides cntr_batt_wgt)
ITM->thin_defense - if prepared or fortified defenses give net protection from arty

Losses from supporting artillery fire are calculated separately from maneuver combat, but are based on the TED score for artillery derived along with the TED scores of the maneuver weapons in the steps described previously (except for long-range artillery). Artillery adjudication is not based on a force ratio of TEDs, but on a number of weapons killed by a relative artillery score firing against a relative target density. Kills and standards vary for each of several target categories.

The ITM explicitly allocates artillery fire between maneuver and artillery weapons. By default, this allocation is proportional to the total enemy ED strength in these categories. Enemy artillery can be accorded more or less weight through the parameter LANDWAR->cntr_batt_wgt. Alternatively, the parameter LANDWAR->cntr_batt_pct allows the analyst to set the allocation to a fixed percentage.
This section of the battle display reports the percentage of ED losses from all sources for the time period covered. Losses from long-range artillery and air-to-ground sorties are not calculated as part of ground combat adjudication, but are reported here since they enter into the FLOT movement calculation described later in this section. Losses from overrun are the fraction of the defender’s forces that are unable to keep up with the FLOT because of congestion on the road network (reported earlier in this section in the frontage restrictions slide). The “Totl” column shows the total percentage loss from each source. In the above example, it is generally significantly less for the attacker than the percentage losses for the individual maneuver weapon categories because the attacking force is about one-half artillery (by ED score), which suffers little or no attrition and dilutes the total percentage loss.

The total percentage loss is reported in three forms: (1) “totl” is the total loss of all forces from all sources, (2) “mnvr” is the loss to engaged maneuver forces from maneuver combat only (the defender and attacker loss rates calculated in maneuver combat adjudication), and (3) “c3” is the loss of maneuver forces from all sources, with losses from fire support weighted for C3 effectiveness. This last factor is used in the FLOT movement calculations described later in this section.
## Fire Support Summary

<table>
<thead>
<tr>
<th>Attacker</th>
<th>Defender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire</td>
<td>eq loss-from --kills--</td>
</tr>
<tr>
<td>Support</td>
<td>sort sort ftre same veh inf art</td>
</tr>
<tr>
<td>BAI</td>
<td>0 0 0.00 0.00 0 0 0</td>
</tr>
<tr>
<td>Helo</td>
<td>11 8 0.27 6 31 0</td>
</tr>
</tbody>
</table>

Any of LR-Arty, CAS, BAI, AI, or Helo

Sorties or volleys supporting the side

Equivalent sorties or volleys

Sortie losses from air-to-air and ground-to-air defenses

Kills of enemy vehicles, infantry, and artillery weapons

This section of the battle display reports the fire support for each side, which can be volleys of long-range artillery or ground attack sorties of Close Air Support (CAS), Battlefield Air Interdiction (BAI), Air Interdiction (AI), or attack helicopters. It can be more support than has actually been allocated to the commands in the battle, if support allocated to other commands that are not engaged attack units here.
MOFL (FLOT) Movement Rate Calculation

| Time covered, approximate daily rate, distance from last prepared position |
|-----------------------------|--------------------------|
| FLOT move in 4.0 hours (-1.0 km/day, 15.7 km from last prep.) |
| Kms | dens terrain | other multis |
| move base | mult | mult limit into air | fric | min | time |
| 0.10 | 0.18 | 1.50 | 0.50 | 3.33 | 1.40 | 0.57 | 0.93 | 1.00 | 0.60 |

Base movement rate calculated from defender, attacker loss rates
(including losses from arty and fire support)

- Defender density multiplier
- Terrain multiplier
- Terrain movement limit
- Attacker intensity multiplier
- Air-to-ground delay mult. (from air support and long-range arty strikes)
- Combat friction mult. (from ratio of attacker EDs to defender ED loss)
- Minefield mult.
- Ground timing mult. (from level-of-effort in period, LANDWAR->gnd_timing)

Kms move = (base x dens mult x trrn mult) < trrn limit) x other multis

Finally, this section of the battle display reports the calculation of MOFL movement.
In this and other displays, the MOFL is sometimes referred to as the FLOT (Forward Line of Own Troops).

The base rate is calculated from the ratio of the defender’s loss rate to the attacker’s loss rate from all sources, including divisional artillery and all forms of fire support. Losses due to fire support are weighted by parameters ITM->lr_oas_mult, and lr_art_mult to reflect the ability to apply them where and when most needed.

A series of multipliers and limits is applied to the base rate, proceeding from left to right, to achieve the final rate reported at the beginning of the line. Here are some notes on these numbers.

- The terrain movement limit is not a flat cap but is approached asymptotically.
- Each fire support sortie or volley causes a movement delay, in addition to the effects of the kills, in the calculation of the base rate. This is explained later in Section 4, on fire support adjudication.
- Combat friction reflects the fact that units do not advance much when fighting.
  The multiplier is based on the ratio of attacker EDs to defender ED losses, or roughly the amount of killing done by each unit attacker.
- The delay assessed by minefields is explained later, in Section 5.
- The timing multiplier is greater or less than one when the percentage of the daily combat effort expended in this period (LANDWAR->gnd_timing) is different from what would be average (~17%).
## FLOT Movement Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LANDWAR-&gt;low_move, high_move</td>
<td>multipliers of movement at low/high combat intensity</td>
</tr>
<tr>
<td>LANDWAR-&gt;min_density, hold_density</td>
<td>defender TED density below which movement is 150% normal and above which movement is 25% normal</td>
</tr>
<tr>
<td>LANDWAR-&gt;no_adv</td>
<td>whether an unopposed defender can advance to objective</td>
</tr>
<tr>
<td>ITM-&gt;vel_mult</td>
<td>general movement multiplier</td>
</tr>
<tr>
<td>ITM-&gt;vel_lim_mult</td>
<td>multipliers of the terrain cap on movement</td>
</tr>
<tr>
<td>ITM-&gt;lr_oas_mult, lr_art_mult</td>
<td>multipliers of contribution of kills by air-to-ground and long-range arty fire support to MOFL movement (notionally due to C3 effectiveness at directing fires where needed)</td>
</tr>
<tr>
<td>LOC-&gt;max_speed, min_speed</td>
<td>max/min speeds on link; max speed drops to min as refugee parameter rises to 100%</td>
</tr>
<tr>
<td>REGION-&gt;refugees</td>
<td>current extent of refugee problem (0–100%)</td>
</tr>
</tbody>
</table>

These are the parameters affecting MOFL movement. Details on the parameters are included in Appendix J.
MOFL movement is adjudicated in any battle that does not involve a flank contact. In the simple case of two mobile commands with a frontal contact, the front and rear of the defending command and the front of the attacking command move at the same rate. The rear of an attacking command always covers the last network place taken or the last reconstituting unit. The rear of a defending positional command always ends at its last positional unit.

When the rear of a command is in contact with the front or rear of another command, it will move independently according to the rear battle results. A command that is compressed to zero length between two enemy commands is eliminated and all of its units overrun.

Any command contacting the flank of another command is not allowed to advance. It will draw forces from any frontal battle the defending command is involved in and will thus almost always cause the command to be pushed back. It is possible for commands to become gridlocked if the flanked command wins its frontal battle.

The rear of a positional unit (whether or not in a positional command) moves only at the rate allowed in the mission order that placed it into defenses. The front moves at the adjudicated MOFL rate, and, if the unit is compressed to "zero" length, it is overrun by the attacking command.
The battle summary display gives an overview of the ongoing battles in the theater. To allow some comparison between the battles, if the battle did not cover the entire last 4-hour adjudication period, the losses and movement are reported as if it did. This reporting is occasionally misleading if a short, extreme event occurred at the period’s end.
The hist-gnd display shows cumulative weapon losses for the command specified from the time that the display was initialized, using the FORCE->his_init script (described on the next slide). The two “Surviving” columns show total weapons for all assigned forces anywhere in the world; “M+F+K-Killed” lists all killed weapons (mobility, firepower, and non-repairable kills); “Fixed/Issued” lists all weapons repaired locally, repaired in theater repair and returned later, or issued from War Reserve Materiel stocks; and “Assigned” lists all weapons of forces assigned to the command in the time period (negative if unassigned).

In the above example, the display was initialized on day 5 and requested on day 9.
The FORCE->his_init script initializes the accounting for the hist-gnd and hist-air cumulative losses displays. The theater command, ground commands, and air commands for which losses are tracked must be listed in the script. In general, this script will be issued on D-day, unless the analyst wishes to track the assignment of forces to the theater.
4. ITM Ground Combat—Helos and Long-Range Arty

<table>
<thead>
<tr>
<th>ITM Ground Combat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Network</td>
</tr>
<tr>
<td>Ground Forces</td>
</tr>
<tr>
<td>- Units</td>
</tr>
<tr>
<td>- Ground Commands</td>
</tr>
<tr>
<td>Ground Combat</td>
</tr>
<tr>
<td>- Contacts</td>
</tr>
<tr>
<td>- Attrition</td>
</tr>
<tr>
<td>- Movement</td>
</tr>
<tr>
<td><strong>Helos and Long-Range Arty</strong></td>
</tr>
<tr>
<td>Force Management</td>
</tr>
<tr>
<td>- LoC Commander</td>
</tr>
<tr>
<td>- Logistics</td>
</tr>
<tr>
<td>- Defenses</td>
</tr>
</tbody>
</table>

We turn now to a discussion of attack helicopters and long-range artillery.
Attack Helicopters Are a Type of Ground Unit Weapon

- Number and score given in `ground.sec` for each unit
  - Score divided by a standard to get equivalent sorties
- Can be in maneuver units or in separate ground forces
  - Maneuver units with helo components fight normally
  - Helo-only units are destroyed if contacted by enemy
- Fly sorties independent of maneuver combat
- Consume explicit munitions

Attack helicopters are treated as one of the 14 types of weapons carried by ground units. Only the number and score of the helicopters in a unit are known—the names of different helicopter types are not kept in the database. Instead, helicopter characteristics can be set for all units in a command through parameters that are listed in Appendix Z.

The helicopter score is its sortie effectiveness relative to a standard (defined in `ground.sec` after the keyword “HELO”). The score divided by the standard gives its effectiveness in equivalent sorties.

The unit type “HeB” is used for brigades that are composed only of helicopters. When assigned to ground commands, helicopter brigades are always held in reserve. They are destroyed if contacted on their own by an opposing maneuver unit. Units with helicopters in addition to their maneuver weapons are treated as normal maneuver units and can participate in maneuver combat.

Helicopters in a unit fly daily sorties against enemy units as directed by the unit’s mission orders. These sorties are similar to the airwar’s air-to-ground sorties in planning and execution. The orders for employing attack helicopters are described on the next page.

Helicopter munitions are represented as helo-sorties; one helicopter munition is consumed for every sortie flown. Explicit munitions (also used by aircraft and long-range artillery) are consumed only by region and owner. In other words, any helicopter in South Korea would draw from the regional stockpile, but only from supplies owned by its own government. The resupply display shows current totals of explicit munitions; the `SUPPLY->atk_helo` script can create or destroy the munitions. Initial stockpiles of explicit munitions are defined in the file `weapon2.sec`. 
A ground unit with helicopters can be given one or more special missions that direct its helicopter attacks.

The helo-support mission specifies a number of sorties to be flown each day to support a named command, while the helo-strike mission specifies a number of sorties to be flown as a one-time requirement to attack a named command. Multiple missions of each type can be assigned in order to allocate sorties among several commands, but strike missions are resourced first. Any sorties not dedicated by mission orders are automatically flown in support of the unit’s assigned command if the command is oriented. Therefore, attack helicopters in a unit assigned to a theater command (e.g., CFCK) will fly only helo-strike and helo-support missions. The unit receiving the mission does not have to be within the supported command’s orientation, but it must be within range of the command when the sorties are flown.
Helo Sorties Are Planned
Once Each Day

- Planned at 0000Z hours for the entire day
- Changed guidance affects only next day's planning
- Sorties in each period planned according to the percent-per-period timing

<table>
<thead>
<tr>
<th>%-per-period</th>
<th>Percentage of assigned command's total helo sorties flown in each 4-hour period</th>
</tr>
</thead>
<tbody>
<tr>
<td>set helos CFCK hel-timing 0 10 40 30 20 0</td>
<td></td>
</tr>
</tbody>
</table>

Parameters
HELOS->hel_sort - sortie rate per day
HELOS->wx_sort_pct - percentage multiplier of sortie rate due to weather

All helicopter sorties are planned once each day at the beginning of the day, according to the individual unit's missions and the timing guidance. Changes to guidance will not have an effect until the following day's sorties are planned.

The parameter HELOS->hel_tuning specifies the percentage of a command's sorties to be flown in each 4-hour period of the day. As with air-to-ground sorties, the individual ground unit's target is not chosen until the sortie is actually flown.

The helicopter sortie rate is set by the parameter HELOS->hel_sort and is multiplied by HELOS->wx_sort_pct, representing weather effects.
The itm-helo display lists the guidance given to and sorties planned for units assigned to the specified command.

Sorties are not broken down by period but are listed as total planned for the day, total flown to this point, and total aborted. Sorties will abort if they cannot find a viable target in range or do not have munitions. Target criteria are listed in the following slide.

Only the currently active, explicitly issued missions are listed under the current missions section. Because this display was listed at 0800 hours, the strike mission against KN_5C that is shown in the taskings section is no longer shown as a current mission. It was cleared from the list of current missions once it began executing, because it is a one-time strike. Note that, according to the period timing, only 40%, or 20 out of the planned 50 sorties, has been flown by 0800 hours.
Helo Target Selection Is Similar to CAS Targeting

- Chosen from frontal units in contact with the supported command, or in the attacked command
  - Within HELOS->hel_range kms of the helo unit
  - Within HELOS->flot_dist of the supported command
  - Surviving vehicles greater than HELOS->hel_req_arm
- Artillery in targeted unit is attacked with fraction HELOS->hel arty of the sorties
- Vehicles, infantry, and air defense weapons are attacked in proportion to their numbers in the unit
  - Infantry weapons are divided by ITM->infty_alloc
- LANDWAR->hel_target can override default targeting

The ground unit targets for helicopter sorties are chosen according to rules similar to those for CAS sorties.

Targets for sorties supporting a command are selected only from the units engaged with the supported command. Targets for sorties striking a command are selected from the frontal forces of the command. The target unit must also be within HELOS->hel_range kms (direct line) of the unit owning the helicopters or within HELOS->flot_dist of the front of the supported command if they are supporting a command, and must have more vehicles than HELOS->hel_req_arm.

Parameter HELOS->hel arty sets the fraction of sorties attacking a unit that is allocated to attack enemy artillery weapons. The remaining sorties are allocated among the armor and infantry weapons in proportion to their number in the unit. Infantry weapons are divided by ITM->infty_alloc.

Just as the default CAS targeting mechanism can be overridden, the default attack helicopter targeting can be overridden by specifying an enemy unit or command, using the parameter LANDWAR->hel_target.
The weapons killed per equivalent sortie are set independently for four aggregate ground force postures and for three aggregations of targeted ground force weapons (ITM->vehicle_kills, infty_kills,arty_kills). Infantry kills are given as a multiplier of vehicle kills. Helicopters have additional effectiveness multipliers for night operations (HELOS->night_kill, periods 6, 1, and 2) and weather (HELOS->wx_kill_pct).

In addition to causing equipment losses, air-to-ground attacks also slow the advance of the attacking ground force's command, given as a number of hours' delay for an equivalent sortie attacking each equivalent division (ITM->ed_delay_hrs). The command cannot, however, be reduced below a minimum km-per-day speed (ITM->min_flot_kpd).

In addition to causing losses, helo attacks prevent a number of days of supply per equivalent sortie (ITM->dos_disrupt) from being delivered.
### Unit Air Defense Against Helos

- Standard kill rate is adjusted for divergence from standard ground unit SED score.

**Parameters**

- `HELOS->hvuln_atk, hvuln_def` - fraction of helo sorties killed by enemy when supporting an attacking command and the target size is hvuln_base tactical equivalent divisions (SEDS)
- `HELOS->hvuln_base` - SEDs of standard target on which the parameters hvuln_atk and hvuln_def are based
- `HELOS->night_vuln` - multipliers of helo losses during night periods

---

Helicopter losses from ground-to-air defenses are specified as a standard loss rate against a ground unit of standard situational equivalent division (SED) strength. The actual losses vary as the air defense strength of the attacked unit varies from the standard. The SED score includes the equivalent division (ED) score of the unit’s air defense weapons, but not the scores of infantry or artillery weapons. Also, because the SED score is used, terrain- and battle-type modifications to the unit’s strength are included.
In the ITM, *long-range artillery* are those artillery systems that should be explicitly targeted because they are able to fire across corps sectors. The database with JICM 1.0 includes only MRLSs and ATACMSs; however, the analyst can easily define others.

A long-range artillery system is defined by entering the system type in *ground.sec*, specifying its possible munitions in *weapon.sec*, and giving it to specific units as an optional weapon, also in *ground.sec*.

Long-range artillery in a unit fires volleys against enemy units as directed by the unit's mission orders (shown on the next page). These fires are similar to the airwar's air-to-ground strikes in planning and adjudication. The maneuver and regular artillery components of the unit participate in maneuver combat independently of the unit's long-range artillery fires.

Long-range artillery munitions are represented as individual rounds; the number consumed per volley is found in the weapon definition. Explicit munitions (also used by aircraft and helicopters) are counted only by region and owner. In other words, any long-range artillery in South Korea would draw from the regional stockpile, but only from supplies owned by its own government. The resupply display shows current totals of explicit munitions; the SUPPLY->weapon_type script can create or destroy the munitions. Initial stockpiles of explicit munitions are defined in the file *weapon2.sec*.
In addition to its mission pertaining to maneuver combat, a ground unit with long-range artillery can be given one or more special missions that direct its fires.

The arty-support mission specifies a number of volleys to be fired each day to support a named command, and arty-strike specifies a number of volleys to be fired as a one-time requirement to attack a named command. Multiple missions of each type can be assigned in order to allocate fires among several commands, but strike missions are resourced first. Any volleys not dedicated by mission orders are automatically fired in support of the unit's assigned command. The unit receiving the mission does not have to be within the supported command's orientation, but it must be within range of the command when the volleys are fired.
LR-Arty Volleys Are Planned
Once Each Day

- Planned at 0000Z hours for the entire day
- Changed guidance affects only next day's planning
- Volleys in each period planned according to the percent-per-period timing

<table>
<thead>
<tr>
<th>%-per-period</th>
</tr>
</thead>
<tbody>
<tr>
<td>set arty CFCK art-timing 0 10 40 30 20 0</td>
</tr>
</tbody>
</table>

-%-per-period Percentage of assigned command's total lr-arty volleys fired in each 4-hour period

All volleys are planned once each day, at the beginning of the day, according to the individual unit's missions and the timing guidance. Changes to guidance after time 00:00 will not have an effect until the following day's volleys are planned.

The parameter ARTY->art_timing specifies the percentage of each mission's volleys to be fired in each period of the day. As with air-to-ground sorties, the individual ground unit's target is not chosen until the volley is actually fired.
The itm-arty display lists the guidance given to and volleys planned for units assigned to the specified command.

Volleys are not broken down by period but are listed as total planned for the day, total fired to this point, and total aborted. Volleys will abort if they cannot find a target in range or do not have munitions. Target criteria are listed on the following slide.

Only the currently active, explicitly issued missions are listed under the current missions section. Because this display was listed at 0000 hours, the strike mission against KS_1W is still listed as a current mission. It will be cleared from the list of current missions once it begins executing. Also, because the tasked 25 volleys supporting KN_SC are not listed as a current mission, we know that they were not ordered with an explicit arty-support mission but were automatically allocated by the model.
LR-Arty Target Selection
Is Similar to BAI Targeting

- Targets chosen from any but frontal units within maximum distance
  
  **Parameters**
  - AIRWAR->bai_bck_kms - maximum distance of BAI targets from supported command
  - AIRWAR->bai_fwd_kms - distance below which BAI targets are preferred
  - ARTY->lra_req_arm - minimum number of vehicles in an enemy unit for it to be a target

- All weapons are attacked in proportion to their numbers in the unit
  - Infantry weapons are divided by ITM->infty_alloc
- LANDWAR->art_target can override default targeting

The ground unit targets for long-range arty volleys are chosen according to rules similar to those for BAI sorties.

Targets for sorties supporting a command are selected from the units within a maximum distance (AIRWAR->bai_bck_kms) of the front of the supported command. Targets for sorties striking a command are selected from any but the frontal forces of the command. The target unit must also be within the defined range (direct line) of the unit owning the long-range arty and have more vehicles than ARTY->lra_req_arm.

Equivalent volleys attacking a unit are allocated among the armor, infantry, and artillery weapons in proportion to their number in the unit, with infantry weapons divided by ITM->infty_alloc.

Just as the default BAI targeting mechanism can be overridden, the parameter LANDWAR->art_target can be used to override the default targeting by specifying an enemy unit or command.
Effect of Air-to-Ground and LR-Arty Attacks on Ground Units

- Weapons killed per equivalent volley specified for target postures *attack, defend, delay, move*

  **Parameters**
  - ITM->vehicle_kills, arty_kills - vehicle and weapons killed per volley
  - ITM->infy_kills - multiplier of ITM->vehicle_kills for infantry weapons killed
  - LANDWAR->ira_artloss - overrides theater arty kills per sortie or volley for a single ground command (can reflect lower vulnerability of artillery sheltered in the forward area)
  - CMDGOV->deep_fire - multiplier of lr-arty effectiveness (not currently used)

- **Unit is delayed in movement by a number of hours**
  - ITM->ed_delay_hours - hours a one-ED force is delayed per equivalent sortie or volley

- **Delivery of a number of days of supply is disrupted**
  - ITM->dos_disrupt - days of supply not delivered per equivalent sortie or volley

The weapons killed per equivalent volley are set independently for each aggregate ground force posture (via ITM->vehicle_kills, infy_kills, arty_kills). Infantry kills are given as a multiplier of vehicle kills. The effectiveness multiplier CMDGOV->deep_fire is included but is not used in the 1.0 version of the JICM.

In addition to causing equipment losses, long-range artillery attacks also slow the advance of the attacking ground force’s command, given as a number of hours’ delay for an equivalent volley attacking an equivalent division (ITM->ed_delay_hrs). The command cannot, however, be reduced below a minimum km-per-day speed (ITM->min_flot_kpd).

In addition to causing losses, such attacks prevent a number of days of supply per equivalent volley (ITM->dos_disrupt) from being delivered.
5. ITM Ground Combat—Force Management

<table>
<thead>
<tr>
<th>ITM Ground Combat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Network</td>
</tr>
<tr>
<td>Ground Forces</td>
</tr>
<tr>
<td>• Units</td>
</tr>
<tr>
<td>• Ground Commands</td>
</tr>
<tr>
<td>Ground Combat</td>
</tr>
<tr>
<td>• Contacts</td>
</tr>
<tr>
<td>• Attrition</td>
</tr>
<tr>
<td>• Movement</td>
</tr>
<tr>
<td>Helos and Long-Range Arty</td>
</tr>
<tr>
<td>Force Management</td>
</tr>
<tr>
<td>• LoC Commander</td>
</tr>
<tr>
<td>• Logistics</td>
</tr>
<tr>
<td>• Defenses</td>
</tr>
</tbody>
</table>

We turn now to a discussion of the management of ground forces, covering rotation of missions within a ground command, logistics, and constructed defenses.
LoC Commander Model Manages Reserves and Reconstituting Forces

- Commits reserves to fit the terrain width
- Replaces units below set cohesion with reserves
  - LANDWAR->atk_replace, dfnd_replace
- Drops units below set cohesion into reconstitution
  - LANDWAR->atk_pull, dfnd_pull
- Digs-in broken defending units to be overrun
  - Occurs at cohesion level LANDWAR->force_break
- Shifts reconstituting units above set cohesion to reserves
  - LANDWAR->atk_reconst, dfnd_reconst

The LoC (Line of Communication) Commander is an ITM module that manages the rotation of reserve, frontal, and reconstituting forces.

Units are committed from the reserves to go to the frontal battle if the terrain width and the command’s mission limit on divisions allow, or to replace a unit pulled from the front. Units are pulled from the front into the reserves or reconstitution as they fall below set cohesion levels, and are returned from reconstitution to the reserves when they recover to a specified level.

A unit defending by itself, or any defending units in a breakthrough, cannot be pulled from the front into reserves or be reconstituted. When a unit drops below the final cohesion level specified in LANDWAR->force_break, it is considered broken and is immobilized, and overrun if the MOFL moves over it.
Battle Allocator Shifts Weapons in the Defense Between Contacts to Match Threat

Threat from each contact calculated as # of divisions weighted by parameters:
- $ITM->\text{heavy\_mult}$ - for armor (2.0)
- $ITM->\text{flank\_mult}$ - flank contacts (1.5)
- $ITM->\text{rear\_mult}$ - rear contacts (2.0)
- $ITM->\text{piecemeal}$ - internal contacts (1.0)

Percentages of defending forces are shifted between contacts to match threat.

<table>
<thead>
<tr>
<th></th>
<th>Req by Threat</th>
<th>Actual Dfndr</th>
<th>Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front</td>
<td>73%</td>
<td>68%</td>
<td>73%</td>
</tr>
<tr>
<td>Flank</td>
<td>27%</td>
<td>27%</td>
<td></td>
</tr>
<tr>
<td>Rear</td>
<td>33%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Since units in ITM are typically represented as divisions, it is often not appropriate to position entire units to cover flanks or clean up overrun units. Therefore, another ITM module called the Battle Allocator is allowed to shift fractions of the forces in the various contact positions to support other contacts, without moving the actual units.

The Battle Allocator rates the threat faced at each contact by multiplying the number of enemy divisions faced in each contact by a parameter weight for the type of force and contact. These values are normalized to find the percentage of the total threat faced at each contact, and fractions of the forces in each position are reallocated so that the distribution of ED strength matches the distribution of threat.

Weapons are taken first from the internal position, then the rear, flank, and front. Weapons are never shifted to the front: The LoC Commander commits whole units to the front as required.
### Units Affiliate with POMCUS and/or MPS Sets Using the Employ Order

<table>
<thead>
<tr>
<th>MPS set</th>
<th>unit</th>
<th>owner</th>
<th>MPS dest</th>
<th>unit dest</th>
<th>use</th>
</tr>
</thead>
<tbody>
<tr>
<td>order CFCK employ GuamWebSet 1-MPS US Pusan Pusan -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>order CFCK employ 3ACR1RegtSet 3-ACR US -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- **MPS/POMCUS set**: set name from `materiel.sec`
- **unit, owner**: unit and owner name to affiliate with set
- **MPS/unit dest**: destination of MPS ship and ground unit
- **use**: optional use file executed when affiliation complete

**Additional Information:**
- Sets defined in file `materiel.sec`
- MPS ship and unit destinations need not be final debarkation port
  - but must be deployed to the same port eventually
- Ground unit automatically deploys to POMCUS location

---

POMCUS and MPS sets are named sets of unit equipment, prepositioned around the world. Ground units can be ordered to marry up with these sets, using the Employ order. POMCUS (Prepositioned Unit Sets) are located at places; MPS (Maritime Prepositioned Shipping) ships are in special naval task groups.

Given an order to employ a POMCUS set, the ground unit deploys automatically to the location of the set and incorporates the equipment after a delay specified in the set description (file `materiel.sec`). When a ground unit employs an MPS set, individual destinations for the MPS task group and the ground unit are specified. These destinations may not be the same if, for instance, each force is deployed to an intermediate staging area, but both forces must eventually be deployed to the same port to marry up. The delay required for the ground unit to incorporate the MPS equipment is set by the parameter `MOBILITY->mps_delay`.
War Reserve Materiel
Replace Combat Losses

- Stocks of unit equipment at network places
  - defined in materiel.sec
  - standard 14 equipment categories
  - at specific places, owned by specific owners
    display resupply <region> <owner>

- Parameters control replacement rate
  MATERIEL->min_losses - fraction of loss to unit before equipment is issued
  MATERIEL->replace_hrs - hours after H-hour before first issue
  MATERIEL->max_replace - fraction of original unit strength issuable per day

War Reserve Materiel (WRM) are stocks of ground weapons located at network places and available to replace the combat losses of units. Each stock is owned by a particular government and is issued only to units of the same owner and in the same theater as the stock.

The resupply display shows WRM totals (as well as other supplies and munitions) in a region for a particular owner, and the Resupply orders can be used to move or create new WRM.

Replacement rates are controlled by parameters that are set for each theater command.
Combat Losses Are Repaired Locally or in the Rear

- Fraction repairable locally is immediately returned to unit
  
  parameter MATERIEL->local_repair
  
<table>
<thead>
<tr>
<th>tank</th>
<th>ifv</th>
<th>apc</th>
<th>arv</th>
<th>arx</th>
<th>atk</th>
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<tbody>
<tr>
<td>.2</td>
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<td>.2</td>
<td>.1</td>
<td>.2</td>
<td>.05</td>
</tr>
<tr>
<td>.1</td>
<td>.1</td>
<td>.5</td>
<td>.05</td>
<td>.2</td>
<td>.1</td>
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<td>.05</td>
<td>.05</td>
<td>.05</td>
<td>.01</td>
<td></td>
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</tbody>
</table>

- Fraction repairable in rear is added to WRM after a delay
  
  parameter MATERIEL->rear_repair
  
<table>
<thead>
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<th>ifv</th>
<th>apc</th>
<th>arv</th>
<th>arx</th>
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<td>.05</td>
<td>.05</td>
<td>.1</td>
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</table>

  parameter MATERIEL->days_repair
  
<table>
<thead>
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<th>ifv</th>
<th>apc</th>
<th>arv</th>
<th>arx</th>
<th>arx</th>
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<td>5</td>
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</tr>
<tr>
<td>5</td>
<td>10</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

Specified fractions of equipment lost in combat are repairable either locally at the unit or in the rear area after some delay. The fraction of losses judged repairable locally is returned to the unit immediately (in effect, reducing combat losses by that amount). The equipment that is only repairable in rear-area facilities is added to WRM stocks (described on the preceding slide) after a number of days' delay, specified individually for each equipment type. The fraction not repairable locally and not repairable in the rear (100% – MATERIEL->local_repair – MATERIEL->rear_repair) is the fraction never repairable (e.g., K-kills).
Ground Munition Supply Consumption  
Measured in ED–Days of Supply

- Ground Munition supply stocks are totalled by region
  - defined in weapon2.sec
  - measured in ED–days of supply of two types
    - edsupply_self - usable only by the owner’s forces
    - edsupply_other - also usable by allied forces

- Transferred to forces at 0000Z each day
  - converted to days of supply according to unit ED score

- Parameters control resupply rate

  MATERIAL->reorder_point, supply_objective - days of supply below which a unit is resupplied, and amount it is resupplied to

  MATERIAL->network_capacity, gndforce_capacity - maximum days of supply a theater can deliver and a unit can receive in one day

Supply for ground units is measured in ED–days of supply, where one ED–day of supply is the supply required by a force of one ED for one day at the “normal” combat rate. The normal rate is currently defined as main attack, but can be changed in the data.

Stocks of ground supply are kept only by region—they are not located on the surface network. Stocks are kept separately in a region by the owning government and are of two types, usable only by the owner’s forces (edsupply_self) and also usable by allied forces (edsupply_other). Forces draw first from their own supplies, then from interoperable supplies. The parameter CMDGOV->intopr_mlt defines the loss in effectiveness for ground units using allied supplies. It is not implemented in JICM 1.0.

Resupply is accomplished by a simple model that operates once at the beginning of each day. Parameters specify the total amount of supply that can be delivered in the theater and that each unit can receive in a day. ED–days of supply are converted to days of supply for an individual unit when delivered, by dividing by the unit’s ED strength. Delivery is instantaneous—there is no explicit transport of supplies across the network.

A unit begins to lose combat effectiveness when it falls below 2 days of supply on hand. This was described in the section on unit effectiveness, Section 2.
Logistics Tail Length
Modifies Resupply Rate

- Logistics tail for each command moves at set speed (tail_spd), staying between set min (tail_min) and max (tail_hold) distance from MOFL
- Length beyond minimum reduces resupply rate in proportion to set length, where rate is 50% (tail_half).

Parameters
ITM->tail_spd - movement speed of the logistics tail of a command
ITM->tail_min - minimum length of logistics tail (measured to command's MOFL)
ITM->tail_hold - maximum length of log tail before command is ordered to stop
ITM->tail_atk - maximum allowed length of log tail to launch an attack
LANDWAR->tail_half - length of logistics tail at which the resupply rate is reduced 50%

Although corps-level logistics depots are not represented, each ground command has a notional logistics (log) tail that represents the dynamics of a command outrunning its supply—often an important limitation on rapid advances. Only the distance of the log tail from the command’s front is kept and updated each period, according to the movement of the command’s front and the rated speed of the tail (ITM->tail_spd).

The length of a command’s log tail reduces the amount of supplies reaching the command’s frontal units. When the tail is at its minimum length (ITM->tail_min), the supply flow is unrestricted. As the tail length grows, the delivery rate falls asymptotically to zero, where the length at 50% flow is set by LANDWAR->tail_half and is halved at each increment of LANDWAR->tail_half. There are also restrictions on the length of the tail for the command to advance or begin an attack.
Munition Consumption Rate Differs by Command Mission

- Parameter MATERIEL->supply_rate

<table>
<thead>
<tr>
<th>Posture</th>
<th>%</th>
<th>Posture</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main-attack</td>
<td>100</td>
<td>Defend</td>
<td>120</td>
</tr>
<tr>
<td>Spt-attack</td>
<td>80</td>
<td>Delay</td>
<td>120</td>
</tr>
<tr>
<td>Pin-attack</td>
<td>50</td>
<td>Withdraw</td>
<td>40</td>
</tr>
<tr>
<td>Join-attack</td>
<td>50</td>
<td>Positional</td>
<td>120</td>
</tr>
<tr>
<td>Follow</td>
<td>5</td>
<td>Artillery unit</td>
<td>70</td>
</tr>
<tr>
<td>Rear echelon</td>
<td>5</td>
<td>No combat</td>
<td>1</td>
</tr>
</tbody>
</table>

- Measured in % of standard rate of 1 day of supply per day
- Multiplied by parameters MATERIEL->supply_mult in all cases, and MATERIEL->intense_mult in high-intensity battles

The rate at which a unit consumes supplies varies with the mission of its assigned command, its position within that command, and, in some cases, the type of unit. The base consumption rates are defined in terms of the standard rate of one day of supply per day. Consumption is calculated each period.
### Commands and Positional Units

**Build Organic Defenses**

- Build deliberate defenses when units have a defense-type mission and are not being pushed back
- Defense zone started at nose and built toward tail

**Parameters (for theater side)**

- MATERIEL->dlib_rate - kms/day built
- MATERIEL->dlib_depth - maximum km depth that can be built

---

The ITM allows three levels of constructed defenses:

- Deliberate—built with a unit’s organic resources
- Prepared—built with corps engineering resources
- Fortified—fortifications built before hostilities.

A defending command or positional unit always builds deliberate defenses for itself when it is not moving or being pushed back by combat. The defenses are represented as a zone on the link that starts at the command’s or unit’s front and is built back toward its tail, at a set rate (MATERIEL->dlib_rate) and to a maximum distance (MATERIEL->dlib_depth). As long as the defending command or unit has its front within this zone, the command or unit is credited with the defenses.
Zones of defenses are ordered to be built independent of commands or positional units, through the MATERIEL->bld_barrier script. The defenses can be instantly created or ordered built at a kms/day rate set by parameters MATERIEL->prep_rate and fort_rate. Prepared and fortified defenses are also limited by available materials to a total number of square kms that can be built in the theater, set by parameters MATERIEL->prep_left and fort_left.
Minefield Script
Creates minefields along links

<table>
<thead>
<tr>
<th>terrain-segment</th>
<th>type</th>
<th>density</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK itm minefield seoul/9/kimpo vehicle 1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>terrain-segment</td>
<td>position identifying one segment of terrain created with the LANDWAR-&gt;terrain script</td>
<td></td>
</tr>
<tr>
<td>type</td>
<td>vehicle or infantry</td>
<td></td>
</tr>
<tr>
<td>density</td>
<td>1.0 is standard</td>
<td></td>
</tr>
</tbody>
</table>

- Minefield covers the entire length of the identified terrain segment
- Kills a fraction of the frontal forces of a command traversing the segment
- Slows the command by 5% \(x (2 \times \text{vehicle-density} + \text{infantry-density}) / 3\).

Parameter

| ITM->mine_kills | fraction of vehicles or infantry killed per km of 1.0-density minefield, specified for opposed or unopposed conditions |

Minefields are not laid down in arbitrary zones but are, in JICM 1.0, tied to the terrain defined on the link, using the script LANDWAR->terrain:

```
set landwar - terrain Seoul Kimpo Urban 25 25% \\
               Mixed 15 25% \\
               Open 40 50% end
```

Each of the three terrain entries in the above example describes a terrain segment on the link covering a percentage of the distance between Seoul and Kimpo. A minefield is laid by specifying a position on the link with the script ITM->minefield. The new minefield then covers the entire terrain segment that covers that position. To create a smaller minefield, the terrain on the link would have to be redefined to create a smaller terrain segment.

The minefield is characterized by its type (vehicle or infantry) and density as compared with a standard (1.0). The minefield kills a specified fraction/km of the frontal forces of a command traversing the segment. The loss rate is defined for the standard density (ITM->mine_kills) and is multiplied by the minefield’s relative density.

The command advancing into a minefield is also slowed by a nominal 5%, which is adjusted by the weighted average of the minefield’s vehicle and infantry relative densities.
Barrier and Terrain (mine) Displays
Show barriers and minefields along links

_path_
display itm-barrier axis.2

KS.2 has 2.0 Kms of Prepared positions:
They start at Kimpo
They run thru Kimpo/2.0Kms/Inchon
They are ordered thru Kimpo/2.0Kms/Inchon

der段ends_
display terrain seoul uijongbu

Terrain/Mines over 28.2 Kms From Seoul to Uijongbu as follows:
From Seoul to Seoul/11.2Kms/Uijongbu
Terrain: 11.2 Kms of 19.0Km-wide Open
From Seoul/11.2Kms/Uijongbu to Seoul/14.1Kms/Uijongbu
Terrain: 2.9 Kms of 20.0Km-wide Mixed
Mines: CFFC/Infantry density=1.000 extent=100.0%
From Seoul/14.1Kms/Uijongbu to Uijongbu
Terrain: 14.1 Kms of 5.0Km-wide Urban

The itm-barrier display shows all barriers along a path through the network built with the LANDWAR->build_barrier script. It does not show the deliberate defenses constructed by defending commands and positional units. Also, barriers are destroyed as they are overrun and do not show on this display.

Minefields are shown on the terrain display, which lists the terrain segments along a link between two places. The minefield is also considered cleared as enemy forces move over it, so the "extent" field in the display shows the percentage of the remaining length of the terrain segment still covered.
Appendix

A. Parameters for: Ground<>movement

CONTENTS (14 parameters):

FORCE->gnd_embark
FORCE->gnd_move
FORCE->gnd_spacing
FORCE->stop_move
ITM->place_control
ITM->place_value
LANDWAR->move_eff
LOC->delay
LOC->max_speed
LOC->min_speed
LOC->sorts_day
REGION->loc_mult
REGION->refugees
UNIT->delay

**FORCE->gnd_embark**

Description: This option allows the analyst to shunt a ground force aboard any naval group that has at least one amphibious ship assigned. The analyst should use set force ves_move to position the ships BEFORE using this script.

Reasons a force cannot accept this script are:

- force is destroyed
- force is currently involved in a Deploy or Embark order activity
- force is currently executing an earlier gnd_move script
- group has no amphibious ships assigned
- group already has a ground force aboard

GROUP: Flagship name may also be used SPOE, which is where embarkation is assumed to have occurred. It does

NOT cause location of the ships to be there.

PLAN: Abel Plan to implement immediately, or – if none.

**Example(s):**

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Unit</th>
<th>Owner</th>
<th>GROUP</th>
<th>SPOE</th>
<th>PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>set force gnd_embark</td>
<td>6-NARB</td>
<td>SKorea</td>
<td>TG.19.1a</td>
<td>Pusan</td>
<td>Amp-Plan-7</td>
</tr>
</tbody>
</table>
**FORCE->gnd_move**

Description: This option allows the analyst to shunt a permitted ground force to a new position, which must be specified as either a place (example 1) or a between-place position (example 2).

If the arrival day specified has a fractional part, that part sets the time of day of arrival (e.g., 12.5 yields an arrival at noon on day 12).

Reasons a force cannot accept this script are:

- force is destroyed
- force is currently involved in a Deploy or Embark order activity
- force is currently executing an earlier gnd_move script

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Unit</th>
<th>Owner Position</th>
<th>Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>set force gnd_move 6-MARB</td>
<td>SKorea Kimpo</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>set force gnd_move 6-MARB</td>
<td>SKorea Kimpo/10KMs/Inchon</td>
<td>10.2</td>
<td></td>
</tr>
</tbody>
</table>

**FORCE->gnd_spacing**

Description: Minimum time (in hours) between airlift departure of brigades of the same division when they are air deploying out of the same origin place.

See also FORCE->air_spacing.

Default: 24 hours

Maximum: 240

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set force gnd_spacing</td>
<td>12</td>
</tr>
</tbody>
</table>

**FORCE->stop_move**

Description: This option allows the analyst to cancel any currently ordered deployment of a ground force or air force. It will also cancel a currently scripted move (the force will simply “beam down” immediately).

Use this before FORCE->gnd_move or FORCE->air_move if necessary.

Warning: This script does not cause simulation of a change in orders. It simply ends the simulation of movement. If the force is currently scheduled or using strategic sealift, it will be placed at the homeport of the sealift, which is the last port-of-call where the ship unloaded cargo. For example, if pieces of a division are spread over 10 FSS all along the sea-lanes from SPOE to
SPOD, the division and all the ships will just be put back at the SPOE. Also, any airlift associated with the stopped move is released immediately and will become ready as soon as the game is advanced.

Use the find display after using this script to see where the force was placed. Then use FORCE->gnd_move or FORCE->air_move to position it.

**Example(s):**

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Unit</th>
<th>Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>set force stop_move 6-MARB</td>
<td></td>
<td>SKorea</td>
</tr>
<tr>
<td>set force stop_move 356-TFS</td>
<td></td>
<td>SKorea</td>
</tr>
</tbody>
</table>

**ITM->place_control**

Description: This parameter manually resets the current control of a named place to the owner of the location of the named theater side. In the example, control of Pyongyang would be set to SKorea (which owns CFCK), regardless of whose forces are in or around Pyongyang.

This option affects routing decisions but little (if anything) else.

Default: as in data file place.unc.

**Example(s):**

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td></td>
<td>place_control Pyongyang</td>
</tr>
</tbody>
</table>

**ITM->place_value**

Description: The value of a place when determining where reconstituting forces are to be positioned after their command has moved forward. Higher value is higher priority.

Default: 1 all places

Maximum: 30000

Minimum: 1

**Example(s):**

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Place</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td></td>
<td>place_value Seoul 10000</td>
<td></td>
</tr>
</tbody>
</table>

**LANDWAR->move_eff**

Description: Percentage of a ground force’s type movement speed to be used when force is moving tactically within its command area.
Default: 50
Maximum: 100
Minimum: 10

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>move_eff 60%</td>
</tr>
</tbody>
</table>

**LOC->delay**

Description: Allows user to simulate LoC damage by closing a link for a specified number of hours. This LoC damage affects administratively deploying ground forces, NOT tactically moving units.

Hours closed are from the time the script is issued. This information is a set, not an addition. Thus, if you specified 0, you could override any earlier scripted delay that had not yet expired. Dynamically adjudicated delays (resulting from air attacks targeted THTR_loc against a link) are entered in addition to this scripted delay, although each use of the script overrides any previously adjudicated delay.

Forces DO NOT reroute as a result of this script, and any forces already planning to use this link WILL BE delayed for the duration.

Maximum: 240 (10 days)
Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Link</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>set LoC</td>
<td>delay</td>
<td>Seoul/Uijongbu 12</td>
</tr>
</tbody>
</table>

**LOC->max_speed**

Description: The maximum allowable movement speed on this link, in KPD. This speed applies when the value of REGION->refugees is 0%. But as REGION->refugees ranges to 100%, allowable movement speed varies linearly between LOC->max_speed and LOC->min_speed.

So long as LOC->min_speed >= LOC->max_speed (as it is in default data for all links), then REGION->refugees has no effect on the link. To make the refugee congestion model work, reset the values of BOTH LOC->max_speed and LOC->min_speed (and, of course, REGION->refugees).

This parameter affects tactical and deployment movements on the link.

Default: 10000 (congestion model is off)
Maximum: 10000 KPD (model off)
Minimum: 1 KPD

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Link</th>
<th>KPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>set LoC max_speed Seoul/Uijongbu 200</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LOC->min_speed**

Description: The minimum allowable movement speed on this link, in KPD. This speed applies when the value of REGION->refugees is 100%. But as REGION->refugees ranges to 100%, allowable movement speed varies linearly between LOC->max_speed and LOC->min_speed.

So long as LOC->min_speed >= LOC->max_speed (as it is in default data for all links), then REGION->refugees has no effect on the link. To make the refugee congestion model work, reset the values of BOTH LOC->max_speed and LOC->min_speed (and, of course, REGION->refugees).

This parameter affects tactical and deployment movements on the link.

Default: 10000 (congestion model is off)

Maximum: 10000 KPD (model off)

Minimum: 1 KPD

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Link</th>
<th>KPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>set LoC min_speed Seoul/Uijongbu 10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LOC->sorts_day**

Description: Allows user to specify how much LoC damage is caused by air attack. The damage metric is number of equivalent sorties to cause 24-hour closure of the link. Adjudicated LoC damage causes delay affecting administratively deploying ground forces, NOT tactically moving units.

Forces DO NOT reroute because of adjudicated delays, so any forces already planning to use a link WILL BE delayed.

See also LOC->delay.

Default: 0

Maximum: 250

Minimum: 0 (meaning LoC cannot be closed)
Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Link</th>
<th>Eq Sorts / Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>set LoC</td>
<td>sorts_day Seoul/Uijongbu</td>
<td>20</td>
</tr>
</tbody>
</table>

**REGION->loc_mult**

Description: Multiplier of overland movement rates assumed to use the indigenous ITM network. It applies to independent force deployments, not to command tactical movements.

Default: 1.0 All Regions.

Maximum: 1.0

Minimum: .2

Example(s):

<table>
<thead>
<tr>
<th>Region</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set region us-se</td>
<td>loc_mult</td>
<td>.8</td>
</tr>
</tbody>
</table>

**REGION->refugees**

Description: Current extent of the refugee problem in this region as it affects LoC congestion. If 0%, then no problem exists; if 100%, means problem is the worst possible.

See documentation for LOC->max_speed and LOC->min_speed for effect of REGION->refugees.

Example(s):

<table>
<thead>
<tr>
<th>Region</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set region skorea</td>
<td>refugees</td>
<td>20%</td>
</tr>
</tbody>
</table>

**UNIT->delay**

Description: This option allows the user to cause a delay to a named ground force. It will have some effect only IF the force is moving. The example would cause the 3rd-Bde of the 2nd-Armored 8 hours’ delay.

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Unit Name</th>
<th>Owner</th>
<th>Hours delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>set unit delay</td>
<td>2-Armd/3-Bde US</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>
B. Parameters for: Ground<>amphib

CONTENTS (9 parameters):

BEACH->create  BEACH->length
BEACH->position  BEACH->quality
BEACH->width  FORCE->amph_load
FORCE->gnd_embar  FORCE->lcan_turn
VESSEL->plan

BEACH->create
Description: Allows creation of the beach associated with a place that does not already have one. (In naming the place, the -beach suffix is optional.) All items in the beach data are set to default values. In particular, the beach is initially assumed to be located exactly at the named place, but script BEACH->position will override this location.

Example(s):

<table>
<thead>
<tr>
<th>Name</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>set beach</td>
<td>Kimpo</td>
</tr>
<tr>
<td></td>
<td>create</td>
</tr>
</tbody>
</table>

BEACH->length
Description: Length that must be traversed by landing craft, in km.
Default: 5
Maximum: 100
Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Name</th>
<th>Option</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set beach Kimpo-beach</td>
<td>length</td>
<td>.2</td>
</tr>
</tbody>
</table>
**BEACH->position**

Description: Specifies the ITM land position at which the midpoint of a beach is located.

Default: exactly at the place for which the beach is named

Example(s):

```
Name          Option      Position
set beach Kimpo-beach  position  kimpo/5/kaesong
```

**BEACH->quality**

Description: A characterization of the suitability of the beach from the point of view of a force assaulting it. It is either good or poor.

Default: good

Example(s):

```
Name          Option     New Value
set beach Kimpo-beach quality poor
```

**BEACH->width**

Description: Width or frontage of the beach, in km. It is the length of ITM land link along which landings at this beach are assumed to occur. This stretch of link is centered on the position specified by script BEACH->position.

Default: 20

Maximum: 100

Minimum: 1

Example(s):

```
Name          Option     New Value
set beach Kimpo-beach width 10
```

**FORCE->amph_load**

Description: The multiplier for converting the number of troops in a ground unit (given in the PAX column of the Ground Force Type data) into the number of equipped troops against which the carrying capacity of amphib ships is measured (given in the Troops column of the Vessel Type data, Section 4). Thus, if a ground unit is listed as having 15,000 troops, all available amphib ships have a capacity of 1500 troops, and amph_load is set to 2.0, then a total of 15,000 times 2.0 divided by 1500, or 20 amphib ships, would be needed to transport the unit.
Default: 2.5
Maximum: 100.0
Minimum: 1.0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Unit</th>
<th>Owner</th>
<th>GROUP</th>
<th>SPOE</th>
<th>PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>set force</td>
<td>amph_load</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FORCE->gnd_embark**

Description: This option allows the analyst to shunt a ground force aboard any naval group that has at least one amphibious ship assigned. The analyst should use set force ves_move to position the ships BEFORE using this script.

Reasons a force cannot accept this script are:

force is destroyed
force is currently involved in a Deploy or Embark order activity
force is currently executing an earlier gnd_move script
group has no amphibious ships assigned
group already has a ground force aboard

GROUP: Flagship name may also be used SPOE, which is where embarkation is assumed to have occurred. It does

   NOT cause location of the ships to be there.

PLAN: Abel Plan to implement immediately, or – if none.

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Unit</th>
<th>Owner</th>
<th>GROUP</th>
<th>SPOE</th>
<th>PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>set force</td>
<td>gnd_embark</td>
<td>6-MARB</td>
<td>SKorea</td>
<td>TG.19.1a</td>
<td>Pusan Amp-Plan-7</td>
</tr>
</tbody>
</table>

**FORCE->lcac_turn**

Description: The time in hours required for LCAC turnaround—i.e., either to unload troops and equipment onto the beach or to reload at the ships for another trip. (If these times are different, this parameter should be set to the average of the two.) Note that a landing of n cycles would require \((2n-1)\)*lcac_turn (plus the travel time) to complete, because the landing begins with the first load in place.

Default: .2
Maximum: 10.0
Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>set force</td>
<td>1cac_turn</td>
</tr>
</tbody>
</table>

**VESSEL->plan**

Description: Sets the Abel contingency plan to be executed at the end of the current phase of amphibious movement. Execution is allowed only if the designated task group has an embarked or embarking ground force.

Example(s):

<table>
<thead>
<tr>
<th>Group/Flagship</th>
<th>Keyword</th>
<th>Plan Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>set vessel</td>
<td>ATF.26_1</td>
<td>plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KuwaitAssault1</td>
</tr>
</tbody>
</table>
C. Parameters for: Ground<>missile_unit_data

CONTENTS (9 parameters):

CREATE->mslforce                    FORCE->msl_move
MISSILE->latlon                      MISSILE->reload
MSTYPE->alert_rate                   MSTYPE->disp_rate
MSTYPE->max_alert                    MSTYPE->min_flight
MSTYPE->range

CREATE->mslforce

Description: Allows the analyst to create new missile forces that were not in the original database.

Unit name: You must select a unique interface name for the force that meets the missile.sec naming convention. In a nutshell, missile force names must be alpha-numeric characters only—NO punctuation is allowed except the period (.).

Owner: Any government name.

Type: The name of any missile type (from missile.sec).

Size: Enter number of launchers for this force (<= 250).

Ammo: Enter conventional, chemical, or nuclear. Selection must be consistent with weapons types available for the type missile.

Location: Enter the land region, place, or between-place position where the force is to be located.

Note: Use the Assign order to specify a command for the force.

The example below creates a new SKorean force 32-ARMDIV, with TOE exactly 90% of the weapons of the US 1-ARMD, and places it on the network between Seoul and Kimpo, 10 kilometers from Seoul.

Example(s):  

Keyword Unit-Name  Owner  Type  Size  Ammo  Location  
set create mslforce USPATSOK  US  PATRIOT 10  conv  Seoul/15Kms/Kimpo

FORCE->msl_move

Description: Allows the analyst to script the movement of any missile force to any land position in the world. The new position may be specified as either:
the name of a land region (meaning AT the region's default place)

the name of any land region place (e.g., Moscow)

any between-place position (e.g., Seoul/8.2Kms/Kimpo)

The script requires specification of an arrival time. If this time is in the game past, the move occurs instantaneously. If not, the force is totally unavailable for action from the time the script is issued until arrival time occurs, and may not appear in various displays while it is in limbo (awaiting arrival time)

DANGER: If the script is used on a missile force that is targeted according to the strategic execution models, and the effect of the script is to change the region location of the force, it is unclear what effect that change may have on strategic weapons accounting and strategic displays, or whether it is otherwise safe to order a strategic execution affecting that force.

If the arrival day specified has a fractional part, that part sets the time of day of arrival (e.g., 12.5 yields an arrival at noon on day 12).

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Force</th>
<th>New Position</th>
<th>Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>set force</td>
<td>msl_move</td>
<td>KNSCUD1</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kaesong/1.5Km/Munsan</td>
<td></td>
</tr>
<tr>
<td>set force</td>
<td>msl_move</td>
<td>IsraPatr</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TelAviv</td>
<td></td>
</tr>
</tbody>
</table>

**MISSILE->latlon**

Description: Sets the specific latitude and longitude of a missile unit. Using it is not recommended, now that specific Deploy orders can be issued to missile forces.

Default: Centroid of current region.

Example(s):

<table>
<thead>
<tr>
<th>Unit</th>
<th>Keyword</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>set missile</td>
<td>IsraPatr</td>
<td>45</td>
<td>5</td>
</tr>
</tbody>
</table>

**MISSILE->reload**

Description: Adds to the number of missiles available with a given type of warhead (conventional, nuclear, or chemical). This script creates the missiles and their warheads from nothing.

Example(s):

<table>
<thead>
<tr>
<th>Unit</th>
<th>Keyword</th>
<th>Type</th>
<th>Additional</th>
</tr>
</thead>
<tbody>
<tr>
<td>set missile</td>
<td>USNpLMX</td>
<td>reload</td>
<td>nuclear 15</td>
</tr>
</tbody>
</table>
**MSTYPE->alert_rate**

Description: The rate at which a desired alert level can be achieved, expressed as the fraction of the force that can achieve the alert status per hour: e.g., a rate of .5 means that a force can become fully alerted in 2 hours.

Default: Set in the database for all missile types.

Maximum: 1.

Minimum: 0.

Example(s):

<table>
<thead>
<tr>
<th>Type</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set mstype S_3 alert_rate</td>
<td>.02</td>
<td></td>
</tr>
</tbody>
</table>

**MSTYPE->disp_rate**

Description: The rate at which a dispersal operation for this type missile can be achieved, in fraction of the force per hour.

Default: Set in the database for all missile types.

Maximum: 1.

Minimum: 0.

Example(s):

<table>
<thead>
<tr>
<th>Type</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set mstype SCUD disp_rate</td>
<td>.5</td>
<td></td>
</tr>
</tbody>
</table>

**MSTYPE->max_alert**

Description: The maximum alert level that can be ordered for this missile type.

Default: Set in the database for all missile types.

Maximum: 1.

Minimum: 0.

Example(s):

<table>
<thead>
<tr>
<th>Type</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set mstype SCUD max_alert</td>
<td>.90</td>
<td></td>
</tr>
</tbody>
</table>
MSTYPE->min_flight

Description: The minimum flight time for missiles, in minutes. Three categories are recorded: ICBMs, SLBMs, and other. Does not apply to VSRBMs, NUCARTY, or cruise missiles of all types.

Default: Set in the database for all three categories.

Example(s):

<table>
<thead>
<tr>
<th>Type</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set mstype SS10_FA min_flight 15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MSTYPE->range

Description: The maximum range of this missile type, in kms.

Default: Set in the database for all missile types.

Maximum: 100000.0

Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Type</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set mstype SCUD range 1000.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
D. Parameters for: Ground<>airlift

CONTENTS (3 parameters):

   COMMAND->intra_cgo  COMMAND->intra_pax
   FORCE->gnd_spacing

**COMMAND->intra_cgo**

Description: Sets the percentage of LIFT command-assigned cargo aircraft to be used for intra-theater requirements (and thus not available for strategic airlift requirements).

Default: 10 for all lift commands

Maximum: 95
Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Name</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>command intra_cgo</td>
<td>CFCK</td>
</tr>
</tbody>
</table>

**COMMAND->intra_pax**

Description: Sets the percentage of LIFT command-assigned troop aircraft to be used for intra-theater requirements (and thus not available for strategic airlift requirements).

Default: 10 for all lift commands

Maximum: 95
Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Name</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>command intra_pax</td>
<td>CFCK</td>
</tr>
</tbody>
</table>
FORCE->gnd_spacing

Description: Minimum time (in hours) between airlift departure of brigades of the same division when they are air deploying out of the same origin place.

See also FORCE->air_spacing.

Default: 24 hours

Maximum: 240

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set force</td>
<td>gnd_spacing</td>
</tr>
</tbody>
</table>
E. Parameters for: Ground<>preparation

CONTENTS (10 parameters):

  FORCE->no_tng   GOVT->tng_rate
  GROUND->mobilize GROUND->train
  LANDWAR->tng_min REGION->mob_mult
  UNIT->alert     UNIT->mobilize
  UNIT->ready_hours UNIT->train

**FORCE->no_tng**

Description: Select this option if you DO NOT want the current training level of a ground force to be considered in its cohesion calculation.

Example(s):

```
Keyword

set force  no_tng
```

**GOVT->tng_rate**

Description: The rate at which a government’s ground forces can increase their training readiness, in fractional increase per hour. This metric is very inconvenient and will eventually be changed to percent per day (%/day). In the meantime, consider (as a guide) that a rate of .00042 training readiness increase per hour (the current) is equal to ~ 1%/day.

Default: .001 (2.4%/day) all Govts.

Maximum: .1000 (240%/day)

Minimum: .0001 (24%/day)

Example(s):

```
Gov’t   Keyword   Value

set govt czech  tng_rate  .0015
```
**GROUND->mobilize**

Description: Event type mobilize will cause the current mobilization level of all specified forces to be raised to the fraction scripted, but it will not lower the mobilization level of forces already at higher levels.

The user may use "all" in the Owner field, but must specify a location that is either a land region or an overlay region.

Maximum: 1.0
Minimum: 0.0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Owner</th>
<th>Location</th>
<th>Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>ground</td>
<td>mobilize</td>
<td>us</td>
</tr>
</tbody>
</table>

**GROUND->train**

Description: Event type train will cause the current training level of all specified forces to be raised to the fraction scripted, but it will not lower the training level of forces already at higher levels.

The user may use "all" in the Owner field, but must specify a location that is either a land region or an overlay region.

Maximum: 1.0
Minimum: 0.0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Owner</th>
<th>Location</th>
<th>Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>ground</td>
<td>train</td>
<td>us</td>
</tr>
</tbody>
</table>

**LANDWAR->tng_min**

Description: Percentage training level a force must attain before it can begin to deploy.

Default: 100
Maximum: 100
Minimum: 30

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>landwar</td>
<td>CFCK</td>
</tr>
<tr>
<td></td>
<td></td>
<td>tng_min</td>
</tr>
</tbody>
</table>
**REGION->mob_mult**

Description: Analyst multiplier applied to mobilization after all other calculations are done. It permits the analyst to postulate increases or decreases in mobilization speed for forces in a particular region.

Default: 1.0 All Regions.

Maximum: 10.0

Minimum: 0.10

**Example(s):**

<table>
<thead>
<tr>
<th>Region</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>belarus</td>
<td>mob_mult</td>
<td>1.2</td>
</tr>
</tbody>
</table>

**UNIT->alert**

Description: This option allows the user to change the level of alert (disperse) of a specified ground force.

Maximum: 1.0

Minimum: 0.0

**Example(s):**

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Unit</th>
<th>Owner</th>
<th>Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>alert</td>
<td>5-Abn/2-bde</td>
<td>us</td>
<td>1.0</td>
</tr>
</tbody>
</table>

**UNIT->mobilize**

Description: This option allows the user to change the level of mobilization of a specified ground or air force. The ordered level of mobilization is also set to the scripted value.

If, as a result of this script, both UNIT->mobilize and UNIT->train get set to 1.0, a ground unit's alert (disperse) level is also set to 1.0.

The user may use – or all in the Owner field.

Maximum: 1.0

Minimum: 0.0

**Example(s):**

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Unit</th>
<th>Owner</th>
<th>Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>mobilize</td>
<td>24-MXD</td>
<td>us</td>
<td>1.0</td>
</tr>
<tr>
<td>mobilize</td>
<td>35-TPW</td>
<td>us</td>
<td>1.0</td>
</tr>
</tbody>
</table>
**UNIT->ready_hours**

Description: This option allows the user to have a ground force use its personalized alert rate (dispersal rate) instead of its GTYPE d-rate. Simply state a NON-ZERO number of hours to achieve full alert. Using ZERO means you must use the GTYPE rate (the default for all ground forces).

Default: 0 (N.A.)

Maximum: 250

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Unit Name</th>
<th>Owner</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>set unit</td>
<td>ready-hours</td>
<td>2-Arm/3-Bde</td>
<td>US</td>
</tr>
</tbody>
</table>

**UNIT->train**

Description: This option allows the user to change the level of training of a specified ground force.

If, as a result of this script, both UNIT->mobilize and UNIT->train get set to 1.0, a ground unit's alert (dispense) level is also set to 1.0.

The user may use – or all in the Owner field.

Maximum: 1.0

Minimum: 0.0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Unit</th>
<th>Owner</th>
<th>Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>set unit</td>
<td>train</td>
<td>5-Abn/2-bde</td>
<td>us</td>
</tr>
</tbody>
</table>
F. Parameters for: Ground<>supply

CONTENTS (13 parameters):

- FORCE->cargo_factor
- FORCE->cgo_stuff_on
- FORCE->helo_wt
- SUPPLY->atk_helo
- SUPPLY->gnd_owner
- SUPPLY->pol_spec
- UNIT->to_wrm
- FORCE->cgo_stuff_of
- FORCE->force_factor
- GROUND->supply
- SUPPLY->gnd_intop
- SUPPLY->pol_gnd
- SUPPLY->weapon_type

**FORCE->cargo_factor**

Description: When the cargo stuffing model is on [KSTon], the number of ED Days of Supply that can be accommodated in 1 KSTon of slack capacity aboard bulk cargo movement ships.

See also FORCE->cgo_stuff_on, FORCE->force_factor

Default: 1.0 (nominal)

Maximum: 10.0

Minimum: .01

Example(s):

```
Keyword          Value
set force cargo_factor .7
```

**FORCE->cgo_stuff_of**

Description: This option turns off the cargo stuffing model.

See also FORCE->cgo_stuff_on, FORCE->force_factor, FORCE->cargo_factor

Default: OFF

Example(s):

```
Keyword
set force cgo_stuff_of
```
FORCE->cgo_stuff_on

Description: This option causes all convoys that sail with empty space to be filled up ["stuffed"] with ground force munitions (ED Days of Supply). If any ED DoS supplies explicitly exist in the POD region, the inventory is reduced accordingly, or else the supplies simply are assumed into existence.

See also FORCE->cgo_stuff_of, FORCE->force_factor, FORCE->cargo_factor. Programmers use DBX to see F->parm[217] for cumulative ED DoS created.

Default: OFF

Example(s):

Keyword

set force cgo_stuff_on

FORCE->force_factor

Description: When the cargo stuffing model is ON, the number of ED Days of Supply that can be accommodated in 1 KSTon of slack capacity aboard unit (force) movement ships.

See also FORCE->cgo_stuff_on, FORCE->cargo-factor

Default: .50 (nominal)

Maximum: 10.0

Minimum: .01

Example(s):

Keyword     Value

set force force_factor .7

FORCE->helo_wt

Description: Shipping weight of the munitions for 1 attack helo sortie, in tons.

See also FORCE->bomb_wt.

Default: .5 Tons

Maximum: 2.0

Minimum: .1

Example(s):

Keyword     New Value

set force helo_wt 1.0
GROUND->supply

Description: Allows the analyst to cause instantaneous delivery of ammunition to the specified forces. The user may use “all” in the Owner field, but must specify either a particular command or – (in which case only unassigned ground forces will be affected). All ground forces identified and belonging to the stated owner receive an increase in on-hand ammunition equal to that for the number of days specified. In the example, each identified force would receive enough ammunition for 6.5 days.

Maximum: 9999
Minimum: 0.0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Owner</th>
<th>Command</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>ground</td>
<td>supply</td>
<td>uk</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ceur</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6.5</td>
</tr>
</tbody>
</table>

SUPPLY->atk_helo

Description: Stock of munitions for the owner’s attack helicopters, expressed in number of sorties. The analyst can script the delivery or destruction of these munitions. Such orders must specify the land region and the owner of the munitions.

If the quantity specified is greater than 1, the order is interpreted as delivery of that many sorties of supply.

If the quantity specified is less than or equal to 1, the order is interpreted as a kill, and that fraction of the owner’s stocks is destroyed.

See resupply displays for current quantities of munitions by owner.

Default: As defined in file weapon2.sec

Maximum: Values >= 99999 played as infinity.
Minimum: 0.0

Example(s):

<table>
<thead>
<tr>
<th>Region</th>
<th>Owner</th>
<th>Keyword</th>
<th>Frac-to-kill</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>supply</td>
<td>Belg</td>
<td>Belg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>atk_helo</td>
<td>.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>Owner</th>
<th>Keyword</th>
<th>Qty-to-add</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>supply</td>
<td>UK</td>
<td>Belg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>atk_helo</td>
<td>2000</td>
</tr>
</tbody>
</table>

SUPPLY->gnd_intop

Description: Stocks of ground munitions interoperable with those of the allies, expressed in ED days of supply. The analyst can script the delivery or destruction of these munitions. Such orders must specify the land region and the owner of the munitions.
If the quantity specified is greater than 1, the order is interpreted as delivery of that many ED
days of supply.

If the quantity specified is less than or equal to 1, the order is interpreted as a kill, and that
fraction of the owner’s stocks is destroyed.

See resupply displays for current quantities of munitions by owner.

Default: As defined in file weapon2.sec

Maximum: Values $\geq 99999$ played as infinity.

Minimum: 0.0

Example(s):

```
Region  Owner  Keyword    Frac-to-kill
set supply FRG-W US  gnd_intop .6
```

```
Region  Owner  Keyword    Qty-to-add
```

```
set supply FRG-E UK  gnd_intop 25
```

**SUPPLY->gnd_owner**

Description: Stocks of ground munitions that are usable only by their owner, expressed in ED
attack days of supply. The analyst can script the delivery or destruction of these munitions. Such
orders must specify the land region and the owner of the munitions.

If the quantity specified is greater than 1, the order is interpreted as delivery of that many ED
days of supply.

If the quantity specified is less than or equal to 1, the order is interpreted as a kill, and that
fraction of the owner’s stocks is destroyed.

See resupply displays for current quantities of munitions by owner.

Default: As defined in file weapon2.sec

Maximum: Values $\geq 99999$ played as infinity.

Minimum: 0.0

Example(s):

```
Region  Owner  Keyword    Frac-to-kill
set supply FRG-W US  gnd_owner .6
```

```
Region  Owner  Keyword    Qty-to-add
```

```
set supply FRG-E UK  gnd_owner 25
```
**SUPPLY->pol_gnd**

Description: Stock of vehicle fuel for a particular owner in a land region.

If the quantity specified is greater than 1, the order is interpreted as delivery of that many Mega-Barrels of POL.

If the quantity specified is less than or equal to 1, the order is interpreted as a kill, and that fraction of the owner’s stocks is destroyed.

See resupply displays for current quantities of POL by owner.

Default: As defined in file weapon2.sec

Maximum: Values >= 99999 played as infinity.

Minimum: 0.0

Example(s):

<table>
<thead>
<tr>
<th>Location</th>
<th>Owner</th>
<th>Keyword</th>
<th>Frac-to-kill</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>supply</td>
<td>Belg</td>
<td>Belg</td>
</tr>
</tbody>
</table>

**SUPPLY->pol_spec**

Description: Stock of special fuel for a particular owner in a land region. Note: The meaning of *special fuel* is not yet defined.

If the quantity specified is greater than 1, the order is interpreted as delivery of that many Mega-Barrels of POL.

If the quantity specified is less than or equal to 1, the order is interpreted as a kill, and that fraction of the owner’s stocks is destroyed.

See resupply displays for current quantities of POL by owner.

Default: As defined in file weapon2.sec

Maximum: Values >= 99999 played as infinity.

Minimum: 0.0

Example(s):

<table>
<thead>
<tr>
<th>Location</th>
<th>Owner</th>
<th>Keyword</th>
<th>Frac-to-kill</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>supply</td>
<td>Belg</td>
<td>Belg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>Owner</th>
<th>Keyword</th>
<th>Qty-to-add</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>supply</td>
<td>FRG-W</td>
<td>US</td>
</tr>
</tbody>
</table>
**SUPPLY->weapon_type**

Description: Stocks of explicitly defined munitions (e.g., MAVERICK). The analyst can script their delivery or destruction. Such scripts must specify the owner of the weapons and the region where the munitions are located. High-tech air-to-air and ground-to-air munitions are accessible with this option. Caution: If bomber and/or missile weapons inventories are specified, the missile and bomber posting records are NOT adjusted. This affects only some of the strategic force's displays.

If the quantity specified is greater than 1, the order is interpreted as delivery of that many weapons to the inventories of this weapon type.

If the quantity specified is less than or equal to 1, the order is interpreted as a kill, and that fraction of the owner’s stocks is destroyed.

See resupply displays for current quantities of munitions by owner.

Default: As defined in file weapon2.sec

Maximum: Values >= 99999 played as infinity.

Minimum: 0.0

Example(s):

```
Location   Owner   Keyword   Munition  Frac-to-kill
set supply  FRG-W   US       weapon_type  DURANDAL   .6

Location   Owner   Keyword   Munition  Qty-to-add
set supply  Poland  USSR     weapon_type  SCUD_chem  20
```

**UNIT->to_wrm**

Description: This option allows the user to have a ground force deleted as an explicit unit and all of its surviving equipment to be added to the WRM (war reserve materiel) account in the region where the force is located.

Example(s):

```
Keyword   Unit Name   Owner
set unit  to_wrm  2-Armd/3-Bde  US
```
G. Parameters for: Ground<>mines

CONTENTS (2 parameters):

ITM->minefield

ITM->mine_kills

ITM->minefield

Description: Permits creation of minefields and changes to density of existing ones, including setting density to 0, which clears the minefield. Minefields are owned by the theater that creates them and are of Type vehicle or infantry.

Minefields can be located only on explicitly created terrain (i.e., terrain that was created using LANDWAR->terrain), and a minefield that is on such a terrain segment covers the segment’s entire length and width. To create a minefield 5 Kms long but the terrain segment is 10 Kms long, use LANDWAR->terrain to re-create the terrain segments on that link to the sizes desired. This will, of course, eliminate any existing minefields on that link.

You must specify some position WITHIN the terrain segment where you wish the minefield. Use the terrain display to see terrain segment extents. For example, the terrain display for Seoul to Uijongbu shows:

13.8 Kms of 12.0Km-wide Urban terrain

FROM Seoul TO Seoul/13.8Kms/Uijongbu

14.4 Kms of 12.0Km-wide Mixed terrain

FROM Seoul/13.8Kms/Uijongbu TO Uijongbu

The position in the first example below identifies the first segment (since 9 Kms from Seoul is within the first segment’s limits). If you happen to know the percentages you used when creating the segments, you can use intermediate values instead of kilometer points. In the second example, the 25% position clearly identifies the first segment.

You may NOT simply specify a place name (e.g., seoul), since that does not identify a link at all.

See documentation for ITM->mine_kills for minefield effects data.

Default: No land minefields anywhere.

Maximum: 10 density

Minimum: 0 density
Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Position</th>
<th>Type</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CFCK</td>
<td>minefield seoul/9Km/uijungbu</td>
<td>vehicle</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>CFCK</td>
<td>minefield seoul/25%/uijungbu</td>
<td>vehicle</td>
<td>1.2</td>
</tr>
</tbody>
</table>

**ITM->mine_kills**

Description: Fraction of vehicles (or infantry) killed by a minefield of density 1.0 for each kilometer of length traversed. These kills are applied to an advancing enemy command’s at-Flot forces as they traverse the length of terrain segment where the minefield is scripted.

A data set consists of kill rates for vehicular and infantry mines, and a separate data set is needed for two Statuses: opposed and unopposed.

Loss rates vary linearly as the density of a minefield varies from 1.0.

After a command has traversed a field, its density is set to 0.0.

See documentation for ITM->minefield for creation of minefields.

Default: .01/.005 for opposed/unopposed vehicle and infantry, for all Theaters

Maximum: .25

Minimum: .001

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Status</th>
<th>Veh</th>
<th>Inf</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CFCK</td>
<td>mine_kills</td>
<td>opposed</td>
<td>.02</td>
</tr>
</tbody>
</table>
H. Parameters for: Ground<>effects

CONTENTS (18 parameters):

CMDGOV->adef_mult            CMDGOV->air_gnd_mult
CMDGOV->armor_mult            CMDGOV->arty_mult
CMDGOV->cntr_batry            CMDGOV->cntr_manvr
CMDGOV->comb_mult             CMDGOV->deep_fires
CMDGOV->gnd_mult              CMDGOV->helo_mult
CMDGOV->home_mult             CMDGOV->infty_mult
CMDGOV->intopr_mult           GROUND->wpn_scores
LANDWAR->chemical             LANDWAR->surprise
REGION->gnd_mult              UNIT->effective

CMDGOV->adef_mult

Description: Air defense effectiveness multiplier for a Command (applicable to assigned ground units) or Government (applicable to ground units owned).

Default: 1.0
Maximum: 100.0
Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set cmdgov AFSOUTH adef_mult</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

CMDGOV->air_gnd_mult

Description: Joint air-ground operations effectiveness multiplier for a Command (applicable to assigned ground units) or Government (applicable to ground units owned).

Default: 1.0
Maximum: 100.0
Minimum: .01
Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set cmdgov</td>
<td>France</td>
<td>.9</td>
</tr>
</tbody>
</table>

CMDGOV->armor_mult

Description: Armor effectiveness multiplier for a Command (applicable to assigned units) or Government (applicable to units owned). Note that it multiplies the single effectiveness score (EED) of a unit by an amount proportional to that unit’s armor holdings.

Default: 1.0

Maximum: 100.0

Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set cmdgov</td>
<td>AFSOUTH</td>
<td>armor_mult</td>
</tr>
</tbody>
</table>

CMDGOV->arty_mult

Description: Artillery effectiveness multiplier for a Command (applicable to assigned units) or Government (applicable to units owned). Note that it multiplies the single effectiveness score (EED) of a unit by an amount proportional to that unit’s artillery holdings.

Default: 1.0

Maximum: 100.0

Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set cmdgov</td>
<td>AFSOUTH</td>
<td>arty_mult</td>
</tr>
</tbody>
</table>

CMDGOV->cntr_battr

Description: Counter-battery fire effectiveness multiplier for a Command (applicable to assigned ground units) or Government (applicable to ground units owned).

Default: 1.0

Maximum: 100.0

Minimum: .01
Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set cmdgov</td>
<td>AFSOUTH cntr_batttry</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**CMDGOV->cntr_manvr**

Description: Counter-manuever fire effectiveness multiplier for a Command (applicable to assigned ground units) or Government (applicable to ground units owned).

Default: 1.0

Maximum: 100.0

Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set cmdgov</td>
<td>AFSOUTH cntr_manvr</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**CMDGOV->comb_mult**

Description: Combined-operations effectiveness multiplier for a Command (applicable to assigned ground units) or Government (applicable to ground units owned).

Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set cmdgov</td>
<td>AFSOUTH comb_mult</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**CMDGOV->deep_fires**

Description: Deep fire effectiveness multiplier for a Command (applicable to assigned ground units) or Government (applicable to ground units owned). NOT USED

Default: 1.0

Maximum: 100.0

Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set cmdgov</td>
<td>AG-Italy deep_fire</td>
<td>1.1</td>
</tr>
</tbody>
</table>
CMDGOV->gnd_mult

Description: Total ground combat effectiveness multiplier for a Command (applicable to assigned ground units) or Government (applicable to ground units owned).

Default: 1.0

Maximum: 100.0

Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>cmdgov</td>
<td>AFSOUTH</td>
<td>gnd_mult</td>
</tr>
</tbody>
</table>

CMDGOV->helo_mult

Description: Helicopter effectiveness multiplier for a Command (applicable to assigned ground units) or Government (applicable to ground units owned).

Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>cmdgov</td>
<td>France</td>
<td>helo_mult</td>
</tr>
</tbody>
</table>

CMDGOV->home_mult

Description: Effectiveness multiplier applied when fighting on home territory. If given by Command, it applies to assigned ground units. If given by Government, it applies to ground units that government owns.

Default: 1.0

Maximum: 100.0

Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>cmdgov</td>
<td>AFSOUTH</td>
<td>home_mult</td>
</tr>
</tbody>
</table>

CMDGOV->infty_mult

Description: Infantry effectiveness multiplier for a Command (applicable to assigned units) or Government (applicable to units owned). Note that it multiplies the single effectiveness score (EED) of a unit by an amount proportional to that unit's infantry holdings.

Default: 1.0
Maximum: 100.0
Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set cmdgov France infty_mult .9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CMDGOV->inopr_mult**

Description: Interoperability multiplier for a Command (applicable to assigned units) or Government (applicable to units owned). NOT USED

Default: 1.0

Maximum: 100.0
Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set cmdgov Nether1 inopr_mult 1.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GROUND->wpn_scores**

Description: This script allows a user to multiply all the scores of ground forces by owner and/or command, for a particular weapon type. Weapon types are:

- tank
- ifv
- apc
- hvy_arv
- lgtr_arv
- lr_atgm
- sr_atgm
- sm_mortar
- sm_arms
- sp_arty
- td_arty
- gded_adea
- oir_adea
- atk_helo

This script will NEVER cause scores to go to zero when the physical count of surviving weapons is positive.

The script affects operational units, POMCUS/MPS stocks, and WRM.

Note: This script is usable only for a time-zero WSDS.

Maximum: 2.0
Minimum: .2

Example(s):

```
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Weapon</th>
<th>Owner</th>
<th>Command</th>
<th>Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>set ground wpn_scores tank US CEur .5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```
**LANDWAR->chemical**

Description: Allows the user to script effects of a chemical attack. User specifies an effectiveness multiplier that initially applies to the forces being attacked chemically, plus a time, in hours, during which the degradation lasts. The effectiveness multiplier rises linearly from its initial value, reaching 1.0 at the end of the chemical effect’s duration.

Maximum: .999

Minimum: .001

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-CM</td>
<td>chemical</td>
<td>.9</td>
</tr>
</tbody>
</table>

**LANDWAR->surprise**

Description: Allows the user to script a surprise condition into existence. User specifies an effectiveness multiplier that initially applies to the forces being surprised, plus a time, in hours, during which the degradation lasts. The effectiveness multiplier rises linearly from its initial value, reaching 1.0 at the end of the surprise’s duration.

Maximum: .999

Minimum: .001

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>DPRK</td>
<td>surprise</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**REGION->gnd_mult**

Description: Analyst multiplier applied to ground force EED calculations. It permits the analyst to script changes of effectiveness in ground forces not explicitly modeled. For example, the detailed effects of successful OMG operations might not explicitly consider the effects of reducing C3I that result from attacks on rear headquarters. In such case, the analyst might reduce the effectiveness of ground forces in an axis that has been penetrated by an OMG by setting this parameter to a value less than 1.

Default: 1.0 All Regions.

Maximum: 2.0

Minimum: 0.1

Example(s):

<table>
<thead>
<tr>
<th>Region</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set region</td>
<td>frge</td>
<td>gnd_mult</td>
</tr>
</tbody>
</table>
**UNIT->effective**

Description: Sets the effectiveness multiplier for the unit.

Maximum: 1000

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Name</th>
<th>Owner</th>
<th>Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>set unit</td>
<td>effective</td>
<td>2-Arm/3-Bde</td>
<td>US</td>
</tr>
</tbody>
</table>
I. Parameters for: Ground<>unit_data

CONTENTS (18 parameters):

CMDGOV->adef_mult  CMDGOV->armor_mult
CMDGOV->arty_mult  CMDGOV->helo_mult
CMDGOV->infy_mult  CREATE->gndforce
GROUND->kill      GROUND->wpn_scores
UNIT->convert     UNIT->effective
UNIT->kill        UNIT->log_level
UNIT->merge       UNIT->pos_alloc
UNIT->rearm       UNIT->re_assign
UNIT->to_wrm      UNIT->xfer_wpons

CMDGOV->adef_mult

Description: Air defense effectiveness multiplier for a Command (applicable to assigned ground units) or Government (applicable to ground units owned).

Default: 1.0
Maximum: 100.0
Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>cmdgov</td>
<td>AFSOUTH</td>
</tr>
</tbody>
</table>

CMDGOV->armor_mult

Description: Armor effectiveness multiplier for a Command (applicable to assigned units) or Government (applicable to units owned). Note that it multiplies the single effectiveness score (EED) of a unit by an amount proportional to that unit’s armor holdings.

Default: 1.0
Maximum: 100.0
Minimum: .01
Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>cmdgov</td>
<td>AFSOUTH</td>
</tr>
<tr>
<td></td>
<td>armor_mult</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**CMDGOV->arty_mult**

Description: Artillery effectiveness multiplier for a Command (applicable to assigned units) or Government (applicable to units owned). Note that it multiplies the single effectiveness score (EED) of a unit by an amount proportional to that unit's artillery holdings.

Default: 1.0

Maximum: 100.0

Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>cmdgov</td>
<td>AFSOUTH</td>
</tr>
<tr>
<td></td>
<td>arty_mult</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**CMDGOV->helo_mult**

Description: Helicopter effectiveness multiplier for a Command (applicable to assigned ground units) or Government (applicable to ground units owned).

Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>cmdgov</td>
<td>France</td>
</tr>
<tr>
<td></td>
<td>helo_mult</td>
<td>.9</td>
</tr>
</tbody>
</table>

**CMDGOV->infty_mult**

Description: Infantry effectiveness multiplier for a Command (applicable to assigned units) or Government (applicable to units owned). Note that it multiplies the single effectiveness score (EED) of a unit by an amount proportional to that unit's infantry holdings.

Default: 1.0

Maximum: 100.0

Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>cmdgov</td>
<td>France</td>
</tr>
<tr>
<td></td>
<td>infty_mult</td>
<td>.9</td>
</tr>
</tbody>
</table>
**CREATE-->gndforce**

Description: Allows the analyst to create new ground forces that were not in the original database.

Unit name: You must select a unique interface name for the force that meets the ground.sec naming convention, BUT ALSO you may NOT use a name that implies sisterhood with another force. For example, you could create a 32-ARMDIV, but you could NOT create a 32-ARMDIV/1-BRIGADE (i.e., no slashes allowed here). If you simply MUST have sisterhood, then go back to ground.sec and rerun the input processor.

Owner: Any government name.

Force-Like: You must select another (existing) force whose original weapons' TOE is to be used as the basis for creating the new force.

Size: Enter percentage of TOE to use (e.g., 100% means exactly as the named existing force was before it suffered any attrition). Regardless of the percentage stated, the new force will have at least one weapon of every type for which the existing force TOE calls for one or more weapons. The minimum value of size is 25%, the maximum is 200%.

Location: Enter the land region, place, or between-place position where the force is to be located.

Note: Use the Assign order to specify a command for the force.

The example below would create a new SKorean force 32-ARMDIV with TOE exactly 90% of the weapons of the US 1-ARMD, and place it on the network between Seoul and Kimpo, 10 kilometers from Seoul.

**Example(s):**

```
Keyword    Unit-Name  Owner  Force-Like  Size    Location
set create gndforce 32-ARMDIV SKorea 1-ARMD[US]  90% Seoul/10Kms/Kimpo
```

**GROUND-->kill**

Description: Event type kill causes instantaneous attrition to all specified forces. The attrition will be uniformly distributed across all types of weapon systems in the affected forces, and the attrition caused will appear in the other losses data in any history file graphics.

The user may use "all" in the Owner field, but must specify a location that must be either a land region or an overlay region.

Maximum: .99

Minimum: 0.0

**Example(s):**

```
Keyword  Owner  Location  Fraction
set ground kill NKor  skorea  .33
```
**GROUND->wpn_scores**

Description: This script allows a user to multiply all the scores of ground forces by owner and/or command for a particular weapon type. Weapon types are:

```
tank  ifv  apc  hvy_arv  lgtr_arv  lr_atgm  sr_atgm
sm_mortar  sm_arms  sp_arty  td_arty  gded_aedf  oir_aedf  atk_helo
```

This script will NEVER cause scores to go to zero when the physical count of surviving weapons is positive.

The script affects operational units, POMCUS/MPS stocks, and WRM.

Note: This script is usable only for a time-zero WSDS.

Maximum: 2.0

Minimum: 0.2

**Example(s):**

```
Keyword Weapon Owner Command Multiplier
set ground wpn_scores tank US CBur 0.5
```

**UNIT->convert**

Description: This option allows the user to cause an Airborne or Airmobile force that is already located in a theater to be converted into a force that is of type Infantry so that it can subsequently be treated as just another maneuver force in-theater. Such conversions are irrevocable.

Note: The Infantry type specified MUST have the same value for perdiv (in the data file ground.sec) as the force type being converted.

**Example(s):**

```
Keyword Unit Name Owner Inf Type
set unit convert 82-Abn US US_ID
```

**UNIT->effective**

Description: Sets the effectiveness multiplier for the unit.

Maximum: 1000

Minimum: 0

**Example(s):**

```
Keyword Name Owner Multiplier
set unit effective 2-Armd/3-Bde US 1.5
```
UNIT->kill

Description: This option allows the user to attrite a named ground or air force. For a ground unit, kills must be specified as a fraction of the unit, and therefore must be a value greater than 0 and less than or equal to 1. For air units, kills may either be a fraction (of aircraft on the ground) or in the form #n, meaning that n aircraft are killed.

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Unit Name</th>
<th>Owner</th>
<th>Kills</th>
</tr>
</thead>
<tbody>
<tr>
<td>set unit</td>
<td>kill</td>
<td>2-Armd/3-Bde</td>
<td>US</td>
</tr>
<tr>
<td>set unit</td>
<td>kill</td>
<td>32-TFW/201-TFS</td>
<td>US</td>
</tr>
<tr>
<td>set unit</td>
<td>kill</td>
<td>55-TFW/505-TFS</td>
<td>US</td>
</tr>
</tbody>
</table>

UNIT->log_level

Description: Sets an individual log-level for a unit.

Maximum: 5
Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Name</th>
<th>Owner</th>
<th>Log Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>set unit</td>
<td>log_level</td>
<td>2-Armd/3-Bde</td>
<td>US</td>
</tr>
</tbody>
</table>

UNIT->merge

Description: This option allows the user to merge the first named ground unit into the second (the first goes out of existence irrevocably).

Limitation: The unit to be merged cannot currently be deploying. If it is, you must use FORCE->stop_move to terminate the deployment.

Warning: If the specified ground type (Gtype) does not correctly represent the size unit that results from the merger (e.g., the merger of a brigade with 2 brigades yields a division), all displays that account forces by number of divisions will obviously be adversely affected. Similarly, if the new type is inappropriate, the subsequent simulation may be flawed (e.g., if you merge infantry and artillery and specify the result to be armored or amphibious).

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>To Be Merged</th>
<th>Merge Into New Gtype</th>
</tr>
</thead>
</table>
UNIT->pos_alloc

Description: This option allows the user to precisely control the allocation of an in-position ITM positional ground force. The allocation is a vector of four percentages adding up to 100%. The percentages apply to the unit’s front, rear, flank, and amid (internal battles). This script cannot be used unless the force already has a positional mission.

The following limitations apply:

- The allocation to Front must be at least 10%.

- An allocation to Amid is accepted, but a positional force cannot have any internal battles, so the allocation has no modeling effect.

- The allocation will be ignored if it fails to cover a valid current threat, e.g., when the Flank allocation is 0% but there is an enemy at the Flank, the allocation will be ignored (and the normal allocation model will obtain).

- To cancel an existing allocation, simply make all percentages 0.

Note: When a scripted allocation is not provided, or is provided but cannot be used for the reasons specified above, the normal model for auto-allocation to Front, Rear, Flank, and Amid applies. But when a scripted allocation is used, it is used blindly, i.e., what you have specified is what the unit does, period, however illogical that may be vis-à-vis the current enemy situation. For example, if the enemy situation is 100% Front and 0% everywhere else, and you script 10% Front and 90% Rear, only 10% will fight the enemy at the Front.

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Unit[Owner]</th>
<th>Front</th>
<th>Rear</th>
<th>Flank</th>
<th>Amid</th>
</tr>
</thead>
<tbody>
<tr>
<td>set unit pos_alloc 24-mxd[us]</td>
<td>60% 10% 30% 0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>set unit pos_alloc 24-mxd[us]</td>
<td>0% 0% 0% 0% &lt;-- to cancel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

UNIT->rearm

Description: This option allows the user to fill a ground unit’s TOE. Weapons needed are created instantaneously (not taken from or limited by stocks). The unit cannot be on deployment orders, or be destroyed, broken, etc.

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Unit[Owner]</th>
</tr>
</thead>
<tbody>
<tr>
<td>set unit rearm 24-mxd[us]</td>
<td></td>
</tr>
</tbody>
</table>
**UNIT->re_assign**

Description: This option allows the user to transfer the parentage of a unit to another parent unit. The example will cause the 3rd-Bde of the 2nd-Armored Division to become a brigade of the 1st Armored Division. Note that it will be given a new name to distinguish it from other brigades in the receiving unit. The new name will be displayed when the script is processed.

Example(s):

```
Keyword   Transferee      Owner      Receiver
set unit  re_assign   2-Arm/M/3-Bde  US         1-Arm/M
```

**UNIT->to_wrm**

Description: This option allows the user to have a ground force deleted as an explicit unit and all its surviving equipment to be added to the WRM (war reserve materiel) account in the region where the force is located.

Example(s):

```
Keyword   Unit Name      Owner
set unit  to_wrm       2-Arm/3-Bde  US
```

**UNIT->xfer_wpn**

Description: This option allows the user to transfer weapons from one ground force to another. Weapon types are:

- tank
- ifv
- apc
- hvy_arv
- lg_arv
- lr_atgm
- sr_atgm
- sm_mortar
- sm_arms
- sp_arty
- td_arty
- gded_ade
- oir_ade
- atk_helo

Example(s):

```
Keyword   Losing Unit[Owner] Gaining Unit[Owner] Weapon  Frac or #
set unit xfer_wpn 5-Corps/3-ID[Skor] 5-Corps/8-ID[Skor] tank .33
set unit xfer_wpn 5-Corps/3-ID[Skor] 5-Corps/8-ID[Skor] sp_arty #8
```
J. Parameters for: Ground<>network

CONTENTS (8 parameters):

- LANDWAR->terrain
- LOC->delay
- LOC->location
- LOC->max_speed
- LOC->min_speed
- LOC->path
- LOC->sorts_day
- REGION->refugees

**LANDWAR->terrain**

Description: Allows the user to script terrain data between two places connected by a network link. Up to 10 sequential data records can be defined between two connected places, BUT all terrain data for a link must be given within a single set. If a link already has terrain data, this set of data replaces it.

Enter “—” at the Command prompt.

Types of terrain are: open mixed rough urban mountain river

*Shoulder space* is the average military width of the terrain.

A “—” at the Kms, or % of Total prompt means all the rest, and cancels the requirement to end the script with “end”.

Note: Use of Kms instead of % will NOT increase accuracy, which is limited to what can be obtained by specifying integer percents.

The example below demonstrates how to break the terrain between Seoul and Kimpo into 3 sections. The first two sections cover 25% of the total distance (each), and the third covers the remaining 50% of the distance. Note that the script ends with the string “end”.

**Example(s):**

```
set landwar - terrain Seoul Kimpo
             Mixed 15.0    25%
             Open  40.0    50%
```

**LOC->delay**

Description: Allows user to simulate LoC damage by closing a link for a specified number of hours. This LoC damage affects administratively deploying ground forces, NOT tactically moving units.
Hours closed are from the time the script is issued. It is a set, not an addition. Thus, if you specified 0, you could override any earlier scripted delay that had not yet expired. Dynamically adjudicated delays (resulting from air attacks targeted THTR_loc against a link) are in addition to this scripted delay, although each use of the script overrides any previously adjudicated delay.

Forces DO NOT reroute because of this script, and any forces already planning to use this link WILL BE delayed for the duration.

**Example(s):**

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Link</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>set LoC delay</td>
<td>Seoul/Uijongbu</td>
<td>12</td>
</tr>
</tbody>
</table>

**LOC->location**

Description: Allows user to establish predefined positions on the networks, after which those positions can be referred to simply by the name stated in the script.

The location name cannot conflict with the name of any place, or with any previously defined path names or location names (see set LoC path documentation).

The position defined may simply be a place (although why one would wish to do this is not immediately clear), or a between-place position, e.g., placename-a/xxxKms/placename-b, in which case the position is xxx kilometers from placename-a on the link to placename-b.

**Example(s):**

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Name</th>
<th>Position string</th>
</tr>
</thead>
<tbody>
<tr>
<td>set LoC location</td>
<td>POS-alfa</td>
<td>Uijongbu/15Kms/Seoul</td>
</tr>
</tbody>
</table>

**LOC->max_speed**

Description: The maximum allowable movement speed on this link in KPD. This speed applies when the value of REGION->refugees is 0%. But as REGION->refugees ranges to 100%, allowable movement speed varies linearly between LOC->max_speed and LOC->min_speed.

So long as LOC->min_speed >= LOC->max_speed (as it is in default data for all links), then REGION->refugees has no effect on the link. To make the refugee congestion model work, reset the values of BOTH LOC->max_speed and LOC->min_speed (and, of course, REGION->refugees).

Resetting options affects tactical and deployment movements on the link.

Default: 10000 (congestion model is off)

Maximum: 10000 KPD (model off)

Minimum: 1 KPD
Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Link</th>
<th>KPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>set LoC max_speed Seoul/Uijongbu 200</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LOC->min_speed**

Description: The minimum allowable movement speed on this link, in KPD. This speed applies when the value of REGION->refugees is 100%. But as REGION->refugees ranges to 100%, allowable movement speed varies linearly between LOC->max_speed and LOC->min_speed.

So long as LOC->min_speed >= LOC->max_speed (as it is in default data for all links), then REGION->refugees has no effect on the link. To make the refugee congestion model work, reset the values of BOTH LOC->max_speed and LOC->min_speed (and, of course, REGION->refugees).

This affects tactical and deployment movements on the link.

Default: 10000 (congestion model is off)

Maximum: 10000 KPD (model off)

Minimum: 1 KPD

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Link</th>
<th>KPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>set LoC min_speed Seoul/Uijongbu 10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LOC->path**

Description: Allows user to establish predefined paths across the networks, after which those paths can be referred to simply by the name stated in the script.

The path name cannot conflict with the name of any place, or with any previously defined path names or location names (see set LoC location documentation).

The path defined must require no intermediate routing, i.e., there MUST be a direct network link (see data in places.unc) between every adjacent pair of places mentioned in the path string.

No place may be mentioned more than once in the path (no loops).

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Name</th>
<th>Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>set LoC path</td>
<td>LOC-alfa</td>
<td>Uijongbu&gt;Seoul&gt;Kimpo&gt;Inchon</td>
</tr>
</tbody>
</table>
**LOC->sorts_day**

Description: Allows user to specify how much LoC damage is caused by air attack. The damage metric is number of equivalent sorties to cause 24-hour closure of the link. Adjudicated LoC damage causes delay affecting administratively deploying ground forces, NOT tactically moving units.

Forces DO NOT reroute because of adjudicated delays, so any forces already planning to use a link WILL BE delayed.

See also LOC->delay.

Default: 0

Maximum: 250

Minimum: 0 (meaning LoC cannot be closed)

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Link</th>
<th>Eq Sorts / Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>set LoC sorts_day</td>
<td>Seoul/Uijongbu</td>
<td>20</td>
</tr>
</tbody>
</table>

**REGION->refugees**

Description: Current extent of the refugee problem in this region as it affects LoC congestion. If 0%, then no problem exists; if 100%, then problem is the worst possible.

See documentation for LOC->max_speed and LOC->min_speed for effect of REGION->refugees.

Example(s):

<table>
<thead>
<tr>
<th>Region Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set region</td>
<td>skorea refugees</td>
</tr>
</tbody>
</table>
K. Parameters for: Ground<>commands

 CONTENTS (8 parameters):

 COMMAND->call_plan  COMMAND->create
 COMMAND->deorient   COMMAND->intra_cgo
 COMMAND->intra_pax   COMMAND->log_level
 COMMAND->orient      COMMAND->superior

 COMMAND->call_plan

 Description: Allows user to specify the name of an Abel Contingency plan (defined in Abel/Plan and called from Abel/contingency.A) to be automatically invoked when the commands MOFL or CONL reach a specified position.

 The command specified MUST already be oriented (see set command orient) and have a current ITM land combat mission (see CMD-Mission order).

 The Plan-Name must be spelled precisely as the plan function name is, i.e., case and punctuation matter.

 Mode may be either mofl or conl.

 Position is any place on the command’s mission path EXCEPT its current position.

 Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Command</th>
<th>Plan-Name</th>
<th>Mode</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>command</td>
<td>call_plan</td>
<td>KS-11</td>
<td>Plan-WXYZ mofl</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Seoul/10Kms/Kimpo</td>
</tr>
</tbody>
</table>

 COMMAND->create

 Description: Allows user to create a new command. A superior and an associated location are defined for the command, either of which may be -.

 Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>New Command</th>
<th>Superior</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>command</td>
<td>create</td>
<td>AG-Gamma</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NATO</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Switzerland</td>
</tr>
</tbody>
</table>
**COMMAND->deorient**

Description: Use this option to cancel an existing command orientation (prior to re-orienting a command).

Note: Canceling an orientation of necessity cancels existing missions and echelonment as well. If you cancel the orientation for ANY command in an echelonment, it is as though you issued a cancel for ALL commands in the echelonment.

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>set command</td>
<td>deorient</td>
</tr>
<tr>
<td>KN-3W</td>
<td></td>
</tr>
</tbody>
</table>

**COMMAND->intra_cgo**

Description: Sets the percentage of a LIFT command-assigned cargo aircraft that is to be used for intra-theater requirements (and is thus not available for strategic airlift requirements).

Default: 10 for all lift commands

Maximum: 95

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Name</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set command</td>
<td>intra_cgo</td>
<td>CFCK</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25</td>
</tr>
</tbody>
</table>

**COMMAND->intra_pax**

Description: Sets the percentage of a LIFT command-assigned troop aircraft that is to be used for intra-theater requirements (and is thus not available for strategic airlift requirements).

Default: 10 for all lift commands

Maximum: 95

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Name</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set command</td>
<td>intra_pax</td>
<td>CFCK</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25</td>
</tr>
</tbody>
</table>
**COMMAND->log_level**

Description: Sets an individual log-level for a command.

Maximum: 5

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Name</th>
<th>Log Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>set command log_level</td>
<td>KS-11</td>
<td>5</td>
</tr>
</tbody>
</table>

**COMMAND->orient**

Description: Specifies the orientation of an ITM ground force command, making it potentially eligible for Cmd-mission orders and ITM ground combat. Only a subordinate of a theater command may accept script command orient, and it must be a first-echelon (or non-echeloned) command with NO subordinate commands.

To reorient a command, you must first use the “set command deorient” option (which is the only way to cancel an existing orientation).

The orientation string consists of at least 2 and as many as 4 parts, all strung together with NO intervening blank spaces:

- The REAR part is optional, and when used specifies the position at the rear of the command. It may be specified as a distance behind the CONL position (see below) in kilometers, e.g., (31.5Kms), or it may be an explicit position, e.g., (Seoul) or (Seoul/10.1Kms/Uijongbu). It may also be the name of a predefined position (see the documentation for set LOC path), e.g., (DMZ-4), if that is a preset name. If this part is omitted, it will be as though (25.0Kms) had been typed.

- The CONL part is mandatory and must be either an explicitly stated position or the name of a predefined position, as just described above. It describes the forwardmost position of the command being oriented.

- The PATH part is mandatory and must be either an explicitly stated sequential path, e.g., Uijongbu>Seoul>Kimpo>Inchon, or the name of a predefined path (see the documentation for set LOC path), e.g., Uijongbu-Inchon, if that is a preset name.

- The REVERSE part is only used IF the PATH specified is logically backwards. For example, if Uijongbu-Inchon has been defined as Uijongbu>Seoul>Kimpo>Inchon, its directionality is from Uijongbu to Inchon. If you wished a command to be along that path but its orientation is opposite the path direction, use a “-” for the REVERSAL part.

Thus: (10.0Kms)Uijongbu-Inchon(Seoul/20Kms/Uijongbu) places the CONL of the command 20 Kms from Seoul and the rear 30 Kms from Seoul (the command is facing Seoul).

But: -(-10.0Kms)Uijongbu-Inchon(Seoul/20Kms/Uijongbu) places the CONL of the command 20 Kms from Seoul and the rear 10 Kms from Seoul (the command is facing Uijongbu).
Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Command</th>
<th>Orientation</th>
<th>String Parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>command</td>
<td>orient</td>
<td>KN-3W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>REVERSE(REAR)PATH(CONL)</td>
<td></td>
</tr>
</tbody>
</table>

**COMMAND->superior**

Description: Resets the immediate superior of a given command.

Note: It does NOT change what governments have joined or granted control to the affected command.

Example(s):

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Command</th>
<th>Superior</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>command</td>
<td>superior</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FR-Balkan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HCF_W</td>
</tr>
</tbody>
</table>
L. Parameters for: Ground<>arty_ops

CONTENTS (12 parameters):

ARTY->art_req_arm
CMDGOV->cntr_battry
CMDGOV->deep_fires
LANDWAR->arty_range_kms
LANDWAR->cntr_batt_pct
LANDWAR->dir_fire_range
ARTY->art_timing
CMDGOV->cntr_manvr
LANDWAR->arty_escape_pct
LANDWAR->arty_trap_pct
LANDWAR->cntr_batt_wgt
LANDWAR->init_art_prep

**ARTY->art_req_arm**

Description: Minimum number of vehicle targets in an enemy unit if the unit is to be considered a viable target for long-range artillery engagement.

See ITM->vehicle_kills in Appendix Y for arty kill data.

Default: 20

Maximum: 500

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set arty</td>
<td>KS_11 art_req_arm</td>
<td>15</td>
</tr>
</tbody>
</table>

**ARTY->art_timing**

Description: The percentage of a command’s total long-range artillery that will be shot in each 4-hour period of the ITM day. Note that it is based on assigned command, not supported command.

See ITM->vehicle_kills in Appendix Y for arty kill data.

Default: 0 0 40 30 30 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>A New Percent for Each Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>set arty</td>
<td>KS_11 art_timing</td>
<td>10 20 30 20 20 0</td>
</tr>
</tbody>
</table>
**CMDGOV->cntr_battry**

Description: Counter-battery fire effectiveness multiplier for a Command (applicable to assigned ground units) or Government (applicable to ground units owned).

Default: 1.0

Maximum: 100.0

Minimum: .01

**Example(s):**

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>cmdgov</td>
<td>AFSOUTH</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**CMDGOV->cntr_manvr**

Description: Counter-manuever fire effectiveness multiplier for a Command (applicable to assigned ground units) or Government (applicable to ground units owned).

Default: 1.0

Maximum: 100.0

Minimum: .01

**Example(s):**

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>cmdgov</td>
<td>AFSOUTH</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**CMDGOV->deep_fires**

Description: Deep fire effectiveness multiplier for a Command (applicable to assigned ground units) or Government (applicable to ground units owned). NOT USED

Default: 1.0

Maximum: 100.0

Minimum: .01

**Example(s):**

<table>
<thead>
<tr>
<th>Cmd/Gov</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>cmdgov</td>
<td>AG-Italy</td>
<td>1.1</td>
</tr>
</tbody>
</table>
**LANDWAR->arty_escape_pct**

Description: Percentage of a positional maneuver force’s artillery that transfers to its positional command’s separate artillery force when the maneuver force is overrun at the command’s forward battle.

Default: 70

Maximum: 100

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>CFCK</td>
<td>arty_escape_pct</td>
</tr>
</tbody>
</table>

**LANDWAR->arty_range_kms**

Description: Kilometers forward of a command’s front that the command can engage an enemy when it is not in contact with any enemy.

Note: 0 means NO out-of-contact artillery battles

Default: 10

Maximum: 50

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Kilometers</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>CFCK</td>
<td>arty_range_kms</td>
</tr>
</tbody>
</table>

**LANDWAR->arty_trap_pct**

Description: Percentage of a positional command’s separate artillery that transfers to a positional command’s forward maneuver force when the maneuver force is overrun at the command’s forward battle.

Default: 30

Maximum: 100

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>CFCK</td>
<td>arty_trap_pct</td>
</tr>
</tbody>
</table>
LANDWAR->cntr_batt_pct

Description: When less than or equal to 100, this is the percentage of artillery EDs that are allocated to counter-battery fire. The remainder are allocated to counter-maneuver. When set equal to 101%, an ABEL model (function Determine-cntr-bttry-frac in file sfs.A) determines the allocation.

Default: 101

Maximum: 101

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7 cntr_batt_pct</td>
<td>60</td>
</tr>
</tbody>
</table>

LANDWAR->cntr_batt_wgt

Description: The weight accorded to artillery forces when calculating the fraction of artillery to allocate to counter-maneuver instead of counter-battery (function Determine-cntr-bttry-frac in file sfs.A). This parameter is not used when LANDWAR->cntr_batt_pct is set to 100% or less, which sets the allocation directly.

Default: 1.0

Maximum: 1000.0

Minimum: 0.001

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7 cntr_batt_wgt</td>
<td>2.5</td>
</tr>
</tbody>
</table>

LANDWAR->dir_fire_range

Description: Average range (km) of direct-fire weapons.

Default: 5

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7 dir_fire_range</td>
<td>10</td>
</tr>
</tbody>
</table>
**LANDWAR->init_art_prep**

Description: Number of days of wartime preparation equivalent to peacetime preparation done for artillery.

Default: 20

Maximum: 250

Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>init_art_prep 30</td>
</tr>
</tbody>
</table>
M. Parameters for: Ground<>combat_adjud

CONTENTS (29 parameters):

ITM->aarmor_req_mult
ITM->ainf_req_mult
ITM->armor_req_mult
ITM->arty_req_mult
ITM->coh_curve_frac
ITM->gnd_timing
ITM->inf_req_mult
ITM->lr_art_mult
ITM->minefield
ITM->overrun_mult
ITM->shock_hours
ITM->thin_defense
ITM->vel_mult
LANDWAR->hold_density
LANDWAR->min_density
ITM->aarty_req_mult
ITM->armor_per_km
ITM->arty_per_km
ITM->att_mult
ITM->flank_mult
ITM->heavy_mult
ITM->infty_per_km
ITM->lr_oas_mult
ITM->mine_kills
ITM->rear_mult
ITM->shock_mult
ITM->vel_lim_mult
LANDWAR->force_break
LANDWAR->kv_board

**ITM->aarmor_req_mult**

Description: Multiplier of the SED density of anti-armor required to prevent a shortage.

Default: 1.0

Maximum: 10.0

Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>aarmor_req_mult .2</td>
</tr>
</tbody>
</table>
**ITM->aarty_req_mult**

Description: Multiplier of the SED density of anti-artillery required to prevent a shortage.

Default: 1.0

Maximum: 10.0

Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>CFCK</td>
<td>aarty_req_mult  .2</td>
</tr>
</tbody>
</table>

**ITM->ainf_req_mult**

Description: Multiplier of the SED density of anti-infantry required to prevent a shortage.

Default: 1.0

Maximum: 10.0

Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>CFCK</td>
<td>ainf_req_mult  .2</td>
</tr>
</tbody>
</table>

**ITM->armor_per_km**

Description: Number of armored vehicles per km of terrain width that can fight. Terrain width is set by LANDWAR->terrain.

Default: 40

Maximum: 10000

Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>CFCK</td>
<td>armor_per_km  40</td>
</tr>
</tbody>
</table>

**ITM->armor_req_mult**

Description: Multiplier of the SED density of armor required to prevent a shortage.

Default: 1.0
Maximum: 10.0
Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>CFCK</td>
</tr>
<tr>
<td></td>
<td>armor_req_mult</td>
</tr>
</tbody>
</table>

**ITM->arty_per_km**

Description: Number of artillery per km of terrain width that can fight. Terrain width is set by LANDWAR->terrain.

Default: 1000

Maximum: 10000

Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>CFCK</td>
</tr>
<tr>
<td></td>
<td>arty_per_km</td>
</tr>
</tbody>
</table>

**ITM->arty_req_mult**

Description: Multiplier of the SED density of artillery required to prevent a shortage.

Default: 1.0

Maximum: 10.0

Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>CFCK</td>
</tr>
<tr>
<td></td>
<td>arty_req_mult</td>
</tr>
</tbody>
</table>

**ITM->att_mult**

Description: Multiplier of attrition from maneuver combat.

Default: 1.0

Maximum: 10.0

Minimum: .1
Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>CFCK</td>
</tr>
<tr>
<td>set itm</td>
<td>att_mult</td>
</tr>
<tr>
<td>set itm</td>
<td>.95</td>
</tr>
</tbody>
</table>

**ITM->coh_curve_frac**

Description: The fractional value of cohesion (cohesion%/100%) below which the cohesion multiplier of EEDs decreases linearly from 1.0 to 0.0.

Default: .80
Maximum: 1.0
Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>CFCK</td>
</tr>
<tr>
<td>set itm</td>
<td>coh_curve_frac</td>
</tr>
<tr>
<td>set itm</td>
<td>.70</td>
</tr>
</tbody>
</table>

**ITM->flank_mult**

Description: Relative-threat value of contact on the flanks versus on the front.

Default: 1.5
Maximum: 5.0
Minimum: 1.0

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>CFCK</td>
</tr>
<tr>
<td>set itm</td>
<td>flank_mult</td>
</tr>
<tr>
<td>set itm</td>
<td>1.2</td>
</tr>
</tbody>
</table>

**ITM->gnd_timing**

Description: Vector of 6 percentages adding to 100 that define what percentage of a day’s worth of ground combat results belongs in each of the 6 4-hour delta-t’s simulated by ITM.

If theater sides have different values, the attacker’s data are used for in-contact calculations. Each side uses its own vector for non-contact movement.

Default: 16.67 each period
Maximum: 100.0 in any period
Minimum: 0.0 in any period
Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>6 New Values adding to 100 percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>gnd_timing</td>
</tr>
<tr>
<td></td>
<td>0%  40%  30%  20%  5%  5%</td>
</tr>
</tbody>
</table>

**ITM->heavy_mult**

Description: Relative-threat value of contact with an armored or mech enemy force versus other types of forces.

Default: 2.0

Maximum: 5.0

Minimum: 1.0

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>heavy_mult</td>
</tr>
<tr>
<td></td>
<td>1.2</td>
</tr>
</tbody>
</table>

**ITM->inf_req_mult**

Description: Multiplier of the SED density of infantry required to prevent a shortage.

Default: 1.0

Maximum: 10.0

Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>inf_req_mult</td>
</tr>
<tr>
<td></td>
<td>.2</td>
</tr>
</tbody>
</table>

**ITM->infty_per_km**

Description: Number of infantry weapons per km of terrain width that can fight. Terrain width is set by LANDWAR->terrain.

Default: 120

Maximum: 10000

Minimum: .1
Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>infinity_per_km</td>
</tr>
</tbody>
</table>

**ITM->lr_art_mult**

Description: A multiplier of the contribution of ground losses caused by LR arty to the FLOT movement rate. FLOT movement is a function of the total loss rates of ground forces of the attacker and defender. Losses caused by LR arty may have a larger effect on FLOT movement than losses from ground combat if intelligence allows arty to be focused at critical places and times.

Default: 1.0

Maximum: 100.0

Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>lr_art_mult</td>
</tr>
</tbody>
</table>

**ITM->lr_oas_mult**

Description: A multiplier of the contribution of ground losses caused by OAS sorties to the FLOT movement rate. FLOT movement is a function of the total loss rates of ground forces of the attacker and defender. Losses caused by OAS sorties may have a larger effect on FLOT movement than losses from ground combat if intelligence allows sorties to be focused at critical places and times.

Default: 1.0

Maximum: 100.0

Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>lr_oas_mult</td>
</tr>
</tbody>
</table>

**ITM->minefield**

Description: Permits creation of minefields and changes to density of existing ones, including setting density to 0, which clears the minefield. Minefields are owned by the theater that creates them and are of Type vehicle or infantry.
Minefields can be located only on explicitly created terrain (i.e., terrain that was created using LANDWAR->terrain), and a minefield that is on such a terrain segment covers the segment’s entire length and width. To create a minefield 5 Kms long in a terrain segment that is 10 Kms long, use LANDWAR->terrain to re-create the terrain segments on that link to the desired sizes. Doing so will, of course, eliminate any existing minefields on that link.

You must specify some position WITHIN the terrain segment to place the minefield. Use the terrain display to see terrain-segment extents. For example, the terrain display for Seoul to Uijongbu shows:

13.8 Kms of 12.0Km-wide Urban terrain
FROM Seoul TO Seoul/13.8Kms/Uijongbu

14.4 Kms of 12.0Km-wide Mixed terrain
FROM Seoul/13.8Kms/Uijongbu TO Uijongbu

The position in the first example below identifies the first segment (since 9 Kms from Seoul is within the first segment’s limits). If you happen to know the percentages you used when creating the segments, you can use intermediate values instead of kilometer points. In the second example, the 25% position clearly identifies the first segment.

You may NOT simply specify a place name (e.g., seoul), since that does not identify a link at all.

See documentation for ITM->mine_kills below for minefield effects data.

Default: No land minefields anywhere.

Maximum: 10 density

Minimum: 0 density

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Position</th>
<th>Type</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>minefield seoul/9Km/uijongbu</td>
<td>vehicle 1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>set itm CFCK</td>
<td>minefield seoul/25%/uijongbu</td>
<td>vehicle 1.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ITM->mine_kills

Description: Fraction of vehicles (or infantry) killed by a minefield of density 1.0 for each kilometer of length traversed. These kills are applied to an advancing enemy command’s at-Flot forces as they traverse the length of terrain segment where the minefield is scripted.

A data set consists of kill rates for vehicular and infantry mines, and a separate data set is needed for two Statuses: opposed and unopposed.

Loss rates vary linearly as the density of a minefield varies from 1.0.

After a command has traversed a field, its density is set to 0.0.

See documentation for ITM->minefield in Appendix G for creation of minefields.
Default: .01/.005 for opposed/unopposed vehicle and infantry, for all Theaters
Maximum: .25
Minimum: .001

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>Status</th>
<th>Veh</th>
<th>Inf</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>CFCK</td>
<td>mine_kills</td>
<td>opposed</td>
</tr>
</tbody>
</table>

**ITM->overrun_mult**

Description: EED multiplier for overrun ground forces.
Default: .50
Maximum: 1.0
Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>CFCK</td>
</tr>
<tr>
<td>overrun_mult</td>
<td>.70</td>
</tr>
</tbody>
</table>

**ITM->rear_mult**

Description: Relative threat value of contact at the rear versus at the front.
Default: 2.0
Maximum: 5.0
Minimum: 1.0

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>CFCK</td>
</tr>
<tr>
<td>rear_mult</td>
<td>1.2</td>
</tr>
</tbody>
</table>

**ITM->shock_hours**

Description: How long EED multiplier shock_mult takes to linearly return to 1.0 after flank or rear contact is made.
Default: 48.0
Maximum: 960.0
Minimum: 0.0
Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>shock_hours 48</td>
</tr>
</tbody>
</table>

**ITM->shock_mult**

Description: EED multiplier when first contacted by enemy on the flank or rear. Value used linearly returns to 1.0 over ITM->shock_hours.

Default: .5

Maximum: 1.0

Minimum: .20

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>shock_mult .5</td>
</tr>
</tbody>
</table>

**ITM->thin_defense**

Description: Specifies whether prepared and fortified defenses are thin (as in Korea) or robust (as in Europe).

Default: Off (meaning robust)

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>thin_def On or Off</td>
</tr>
</tbody>
</table>

**ITM->vel_lim_mult**

Description: Multiplier of the terrain limit on FLOT movement rate (found in file Force-C/Abel/Model/combat.A).

Default: 1.0

Maximum: 5.0

Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>vel_lim_mult .40</td>
</tr>
</tbody>
</table>
**ITM->vel_mult**

Description: Multiplier of FLOT movement rate.

Default: 1.0

Maximum: 10.0

Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK vel_mult</td>
<td>1.1</td>
</tr>
</tbody>
</table>

**LANDWAR->force_break**

Description: Level of cohesion (%) at which units are totally non-functional.

Default: 30

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar KN-7 force_break</td>
<td>20%</td>
<td></td>
</tr>
</tbody>
</table>

**LANDWAR->hold_density**

Description: Defender’s SED/km density above which an attacker’s advance is below the normally calculated movement (hold_density<min_density<brk_density).

Default: .1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar KN-5C hold_density</td>
<td>0.1</td>
<td></td>
</tr>
</tbody>
</table>

**LANDWAR->kv_board**

Description: Writes a Killer-Victim (KV) scoreboard for every changing combat situation to the log file. The scoreboard is a table describing the number of enemy weapons in each category killed by each friendly weapon. Losses are given as if the combat had lasted for an entire day.

Note that this table is calculated from the results of the battle in which the command is involved; it may involve friendly forces from other commands. Also, a new scoreboard is written for each subdelta, since subdeltas are triggered by a change in the combat situation.

Default: Off
Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>On/Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>kv_board</td>
</tr>
</tbody>
</table>

**LANDWAR->min_density**

Description: Defender's SED/km density below which an attacker's advance is above the normally calculated movement (hold_density<min_density<brk_density).

Default: .05

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>min_density</td>
</tr>
</tbody>
</table>
N. Parameters for: Ground<>environment

CONTENTS (9 parameters):

- LANDWAR->bld_barrier
- LANDWAR->del_barriers
- LANDWAR->terrain
- MATERIEL->dlib_depth
- MATERIEL->dlib_rate
- MATERIEL->fort_left
- MATERIEL->fort_rate
- MATERIEL->prep_left
- MATERIEL->prep_rate

**LANDWAR->bld_barrier**

Description: Allows the user to script, or order to be built, land combat defenses.

Type may be deliberate, prepared, or fortified.

The orientation string consists of at least 3 and as many as 4 parts, all strung together with NO intervening blank spaces:

- The REAR part is mandatory. It is the depth of defenses, in kilometers.
- The FRONT part is mandatory and must be either an explicitly stated position or the name of a predefined position (see set LOC location in Appendix J). It describes the forwardmost position of the defenses.
- The PATH part is mandatory and must be either an explicitly stated sequential path, e.g., Uijongbu>Seoul>Kimpo>Inchon, or the name of a predefined path (see the documentation for set LOC path in Appendix J), e.g., Uijongbu-Inchon if that is a preset name.
- The REVERSE part is used only IF the PATH specified is logically backwards. For example, if Uijongbu-Inchon has been defined as Uijongbu>Seoul>Kimpo>Inchon, its directionality is from Uijongbu to Inchon. If you wished a barrier to be along that path but its orientation is opposite the path direction, use a -- for the REVERSAL part.

Thus: (10.0Kms)Uijongbu-Inchon(Seoul/20Kms/Uijongbu) places the FRONT of the barrier 20 Kms from Seoul and the rear 30 Kms from Seoul (the barrier is facing Seoul).

But: --(10.0Kms)Uijongbu-Inchon(Seoul/20Kms/Uijongbu) places the FRONT of the barrier 20 Kms from Seoul and the rear 10 Kms from Seoul (the barrier is facing Uijongbu).

A dash in the Set or -- field means order these defenses built. But set means script them into existence immediately. Note, when Type is deliberate, it is always as though set were typed.

**Example(s):**

```
set landwar KS-11  bld_barrier prepared REVERSE(REAR)PATH(FRONT)  set
```
LANDWAR->del_barriers

Description: Allows the user to script immediate destruction of any defenses located between any pair of PLACES on a path.

The orientation string consists of at least 3 and as many as 4 parts, all strung together with NO intervening blank spaces:

The REAR part is the rearmost place (e.g., Seoul). If REAR is omitted, then the user is assumed to mean the last place on the path.

The FRONT part is the forwardmost place. If FRONT is omitted, then the user is assumed to mean the first place on the path.

The PATH part must be either an explicitly stated sequential path, e.g., Uijongbu>Seoul>Kimpo>Inchon, or the name of a predefined path (see the documentation for set LOC path in Appendix J), e.g., Uijongbu-Inchon if that is a preset name.

The REVERSE part is used only IF the PATH specified is logically backwards. For example, if Uijongbu-Inchon has been defined as Uijongbu>Seoul>Kimpo>Inchon and you want barriers destroyed from (Kimpo/10/Inchon) (REAR) to (Seoul) (FRONT), you can either reverse the sense of the front and rear, or simply prepend the instruction with ¬.

Thus: ¬(Kimpo)Uijongbu-Inchon(Seoul) is the same as:

(Seoul)Uijongbu-Inchon(Kimpo)

Also, since Seoul and Kimpo are in fact adjacent, Seoul>Kimpo (omitting the FRONT and REAR parts) is also the same as the above two full examples.

Example(s):

<table>
<thead>
<tr>
<th>Command Keyword</th>
<th>Orientation String</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>del_barriers</td>
</tr>
<tr>
<td></td>
<td>REVERSE(REAR)PATH(FRONT)</td>
</tr>
</tbody>
</table>

LANDWAR->terrain

Description: Allows the user to script terrain data between two places connected by a network link. Up to 10 sequential data records can be defined between two connected places, BUT all terrain data for a link must be given within a single set. If a link already has terrain data, this set of data replaces it.

Enter – at the command prompt.

Types of terrain are: open mixed rough urban mountain river

Shoulder space is the average military width of the terrain.

A – at the Kms or % of Total prompt means all the rest and cancels the requirement to end the script with “end”.

Note: Use of Kms instead of % will NOT increase accuracy, which is limited to what can be obtained by specifying integer percents.
The example below demonstrates how to break the terrain between Seoul and Kimpo into 3 sections. The first two sections cover 25% of the total distance (each), and the third covers the remaining 50% of the distance. Note that the script ends with the string “end”.

Example(s):

<table>
<thead>
<tr>
<th>Command Keyword</th>
<th>From</th>
<th>Terrain</th>
<th>Shoulder</th>
<th>Type</th>
<th>Space(Kms)</th>
<th>Kms, or % of Total Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td></td>
<td>terrain</td>
<td>Seoul</td>
<td>Kimpo</td>
<td>Urban</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mixed</td>
<td></td>
<td>15.0</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Open</td>
<td></td>
<td>40.0</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>end</td>
</tr>
</tbody>
</table>

**MATERIEL->dlib_depth**

Description: Max. Kms. of Deliberate defenses that a force should build when able.

Default: 5

Maximum: 50

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>dlib_depth</td>
<td>20</td>
</tr>
</tbody>
</table>

**MATERIEL->dlib_rate**

Description: Kms. of Deliberate defenses that a force can build itself in a day.

Default: 1

Maximum: 50

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>dlib_rate</td>
<td>5</td>
</tr>
</tbody>
</table>

**MATERIEL->fort_left**

Description: Sq. Kms. of Fortified defenses that a theater can build total.

Default: 0

Maximum: 10000

Minimum: 0
Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>fort_left</td>
<td>3000</td>
</tr>
</tbody>
</table>

**MATERIEL->fort_rate**

Description: Sq. Kms. of Fortified defenses that a theater can build in a day (so long as materiel are available—see MATERIEL->fort_left above).

Default: 210

Maximum: 10000

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>fort_rate</td>
<td>550</td>
</tr>
</tbody>
</table>

**MATERIEL->prep_left**

Description: Sq. Kms. of Prepared defenses that a theater can build total.

Default: 0

Maximum: 10000

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>prep_left</td>
<td>3000</td>
</tr>
</tbody>
</table>

**MATERIEL->prep_rate**

Description: Sq. Kms. of Prepared defenses that a theater can build in a day (so long as materiel are available—see MATERIEL->prep_left above).

Default: 1050

Maximum: 10000

Minimum: 0
Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>prep_rate</td>
<td>550</td>
</tr>
</tbody>
</table>
O. Parameters for: Ground<>targeting_ground

CONTENTS (12 parameters):

- AIRWAR->bai_bck_kms
- AIRWAR->bai_bck_still
- AIRWAR->bai_fwd_move
- AIRWAR->bai_vehicles
- LANDWAR->art_target
- LANDWAR->cas_target
- AIRWAR->bai_fwd_kms
- AIRWAR->bai_fwd_still
- AIRWAR->cas_vehicles
- LANDWAR->bai_target
- LANDWAR->hel_target

**AIRWAR->bai_bck_kms**

Description: This option and AIRWAR->bai_fwd_kms define two zones along the supported command’s path in which ground forces are targeted by BAI packages. The forward zone begins at the MOFL and ends at distance AIRWAR->bai_fwd_kms from the MOFL. The back zone begins at distance AIRWAR->bai_fwd_kms from the friendly MOFL and goes to distance AIRWAR->bai_fwd_kms + AIRWAR->bai_bck_kms.

The relative weight of effort allocated to each force is set by AIRWAR->bai_fwd_move, AIRWAR->bai_fwd_still, AIRWAR->bai_bck_move, and AIRWAR->bai_bck_still.

Default: 100

Maximum: 250

Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Kms</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>airwar</td>
<td>ROKAF bai_bck_kms 100</td>
</tr>
</tbody>
</table>

**AIRWAR->bai_bck_move**

Description: Weight accorded a moving ground force in the back BAI zone (see AIRWAR->bai_fwd_kms) when allocating targets to BAI packages, relative to AIRWAR->bai_fwd_move, AIRWAR->bai_fwd_still, and AIRWAR->bai_bck_still. The number of packages allocated to the ground force is assigned according to whether the force qualifies (AIRWAR->bai_vehicles), original number of vehicles, then surviving vehicles.

Default: 10
Maximum: 250
Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Wgt</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>airwar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ROKAF</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bai_bck_move</td>
<td>10</td>
</tr>
</tbody>
</table>

**AIRWAR->bai_bck_still**

Description: Weight accorded a still ground force in the back BAI zone (see AIRWAR->bai_fwd_kms) when allocating targets to BAI packages, relative to AIRWAR->bai_fwd_move, AIRWAR->bai_fwd_still, and AIRWAR->bai_bck_move. The number of packages allocated to the ground force is assigned according to whether the force qualifies (AIRWAR->bai_vehicles), original number of vehicles, then surviving vehicles.

Default: 1
Maximum: 250
Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Wgt</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>airwar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ROKAF</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bai_bck_still</td>
<td>1</td>
</tr>
</tbody>
</table>

**AIRWAR->bai_fwd_kms**

Description: This option and AIRWAR->bai_bck_kms define two zones along the supported command’s path in which ground forces are targeted by BAI packages. The forward zone begins at the MOFL and ends at distance AIRWAR->bai_fwd_kms from the MOFL. The back zone begins at distance AIRWAR->bai_fwd_kms from the friendly MOFL and goes to distance AIRWAR->bai_fwd_kms + AIRWAR->bai_bck_kms.

The relative weight of effort allocated to each force is set by AIRWAR->bai_fwd_move, AIRWAR->bai_fwd_still, AIRWAR->bai_bck_move, and AIRWAR->bai_bck_still.

Default: 100
Maximum: 250
Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Kms</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>airwar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ROKAF</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bai_fwd_kms</td>
<td>100</td>
</tr>
</tbody>
</table>
**AIRWAR->bai_fwd_move**

**Description:** Weight accorded a moving ground force in the forward BAI zone (see parameter bai_fwd_kms) when allocating targets to BAI packages, relative to parameters bai_fwd_still, bai_bck_move, and bai_bck_still. The number of packages allocated to the ground force is assigned according to whether the force qualifies (AIRWAR->bai_vehicles), original number of vehicles, then surviving vehicles.

Default: 10

Maximum: 250

Minimum: 1

**Example(s):**

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Wgt</th>
</tr>
</thead>
<tbody>
<tr>
<td>set airwar</td>
<td>ROKAF</td>
<td>bai_fwd_move</td>
</tr>
</tbody>
</table>

**AIRWAR->bai_fwd_still**

**Description:** Weight accorded a still ground force in the forward BAI zone (see AIRWAR->bai_fwd_kms) when allocating targets to BAI packages, relative to AIRWAR->bai_fwd_move, AIRWAR->bai_bck_move, and AIRWAR->bai_bck_still. The number of packages allocated to the ground force is assigned according to whether the force qualifies (AIRWAR->bai_vehicles), original number of vehicles, then surviving vehicles.

Default: 4

Maximum: 250

Minimum: 1

**Example(s):**

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Wgt</th>
</tr>
</thead>
<tbody>
<tr>
<td>set airwar</td>
<td>ROKAF</td>
<td>bai_fwd_still</td>
</tr>
</tbody>
</table>

**AIRWAR->bai_vehicles**

**Description:** Minimum number of armored vehicles in a ground force to be a desirable BAI target. Equipment categories counted are tank, ifv, apc, hvy_arv, and lgt_arv.

Default: 40

Maximum: 250

Minimum: 0
Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>set airwar</td>
<td>ROKAF</td>
<td>bai_vehicles</td>
</tr>
</tbody>
</table>

**AIRWAR->cas_vehicles**

Description: Minimum number of armored vehicles in a ground force to be a desirable CAS target. Equipment categories counted are tank, ifv, apc, hvy_arv, and lgt_arv.

Default: 40

Maximum: 250

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>set airwar</td>
<td>ROKAF</td>
<td>cas_vehicles</td>
</tr>
</tbody>
</table>

**LANDWAR->art_target**

Description: Allows user to specify the target for LR artillery supporting a command. The target may be a named ground force or a named enemy command. Stating a - at the target prompt means cancel existing targeting. When targeting has been set via this interface, the normal targeting logic is ignored in favor of the user’s instructions.

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Enemy Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KS11</td>
<td>art_target KN806</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Enemy Force and Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KS11</td>
<td>art_target 3-Corps/1-Div NKorea</td>
</tr>
</tbody>
</table>

**LANDWAR->bai_target**

Description: Allows the user to specify the target for BAI supporting a command. The target may be a named ground force or a named enemy command. Stating a - at the target prompt means cancel existing targeting. When targeting has been set via this interface, the normal targeting logic is ignored in favor of the user’s instructions.
Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Enemy Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KS11</td>
<td>bai_target</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LANDWAR->cas_target**

Description: Allows the user to specify the target for CAS supporting a command. The target may be a named ground force or a named enemy command. Stating a “-” at the target prompt means cancel existing targeting. When targeting has been set via this interface, the normal targeting logic is ignored in favor of the user’s instructions.

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Enemy Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KS11</td>
<td>cas_target</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LANDWAR->hel_target**

Description: Allows user to specify the target for AtkHelos supporting a command. The target may be a named ground force or a named enemy command. Stating a “-” at the target prompt means cancel existing targeting. When targeting has been set via this interface, the normal targeting logic is ignored in favor of the user’s instructions.

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Enemy Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KS11</td>
<td>hel_target</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Enemy Force and Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KS11</td>
<td>3-Corps/1-Div NKorea</td>
</tr>
</tbody>
</table>
P. Parameters for: Ground<>operations

CONTENTS (28 parameters):

- ITM->gnd_timing
- ITM->place_control
- LANDWAR->attk_cap
- LANDWAR->attk_reconst
- LANDWAR->axis_comm
- LANDWAR->def_with
- LANDWAR->delay_rear
- LANDWAR->dfnd_pull
- LANDWAR->dfnd_replace
- LANDWAR->flank_lim
- LANDWAR->no_adv
- LANDWAR->pos_pass
- LANDWAR->rsv_bck_dist
- LANDWAR->withd_pct
- ITM->max_length
- ITM->place_value
- LANDWAR->attk_pull
- LANDWAR->attk_replace
- LANDWAR->def_replace
- LANDWAR->delay_pct
- LANDWAR->dfdr_flank
- LANDWAR->dfnd_reconst
- LANDWAR->flank_dense
- LANDWAR->flank_withdr
- LANDWAR->nuc_halt
- LANDWAR->pos_reconst
- LANDWAR->rsv_fwd_dist
- LANDWAR->withd_rear

**ITM->gnd_timing**

Description: Vector of 6 percentages adding to 100 that define what portion of a day’s worth of ground combat results belongs in each of the 6 4-hour delta-t’s simulated by ITM.

If theater sides have different values, the attacker’s data are used for in-contact calculations. Each side uses its own vector for non-contact movement.

Default: 16.67 each period

Maximum: 100.0 in any period

Minimum: 0.0 in any period

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>6 New Values adding to 100 percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK gnd_timing</td>
<td>0% 40% 30% 20% 5% 5%</td>
</tr>
</tbody>
</table>
**ITM->max_length**

Description: Maximum length, in kms, of a command's orientation.

Default: 100

Maximum: 200

Minimum: 25

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>max_length</td>
</tr>
</tbody>
</table>

**ITM->place_control**

Description: Manually resets the current control of a named place to the owner of location of the named theater side. In the example, control of Pyongyang would be set to SKorea (which owns CFCK), regardless of whose forces are in or around Pyongyang.

Affects routing decisions but little (if anything) else.

Default: as in data file place.unc

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>place_control  pyongyang</td>
</tr>
</tbody>
</table>

**ITM->place_value**

Description: The value of a place when determining where reconstituting forces are to be positioned after their command has moved forward. Higher value is higher priority.

Default: 1 all places

Maximum: 30000

Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>Place Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>place_value    Seoul 10000</td>
</tr>
</tbody>
</table>

**LANDWAR->attk_cap**

Description: Level of cohesion (%) required for a unit to attack.

Default: 70
Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar KN-7</td>
<td>attk_cap</td>
<td>65%</td>
</tr>
</tbody>
</table>

**LANDWAR->attk_pull**

Description: Level of cohesion (%) at which units in an attacking command are pulled from the front into a reconstituting mission.

Default: 35

Maximum: 99

Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar KN-7</td>
<td>attk_pull</td>
<td>55%</td>
</tr>
</tbody>
</table>

**LANDWAR->attk_reconst**

Description: Level of cohesion (%) at which reconstituting units in an attacking command are deemed to be ready for transfer to reserves.

Default: 70

Maximum: 100

Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar KN-7</td>
<td>attk_reconst</td>
<td>65%</td>
</tr>
</tbody>
</table>

**LANDWAR->attk_replace**

Description: Level of cohesion (%) at which units in an attacking command are replaced with a reserve unit, if one is available. The replaced unit assumes a reserve mission.

Default: 50

Maximum: 99

Minimum: 1
Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>landwar KN-7</td>
<td>attk_replace 55%</td>
</tr>
</tbody>
</table>

**LANDWAR->axis_comm**

Description: Allows the user to specify the classes of maneuver forces that may be committed by the LoC Commander. The default is On (meaning that commitment is allowed) for normal maneuver forces—i.e., armor, mech, and infantry units—but Off for specialized forces, such as airborne, air cavalry, airmobile, amphibious, and security units.

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Class</th>
<th>On/Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>landwar KN-C</td>
<td>axis_comm</td>
<td>aircav</td>
</tr>
</tbody>
</table>

**LANDWAR->def_replace**

Description: Distance (km) behind MOFL (most-forward-unit line) that a reserve defending unit assumes a Positional Defense mission while awaiting a passage of lines with the unit to be replaced.

Default: 30

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>landwar KN-7</td>
<td>def_replace 15</td>
</tr>
</tbody>
</table>

**LANDWAR->def_with**

Description: Distance (km) behind CONL (controlled line) to which defending units are sent when they are pulled from the MOFL (most-forward-unit line).

Default: 30

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>landwar KN-7</td>
<td>def_with 10</td>
</tr>
</tbody>
</table>

**LANDWAR->delay_pct**

Description: Percentage of a command’s forward force that fights in contact with the attacker when delaying.

Default: 33
Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar KN-7</td>
<td>delay_pct</td>
<td>50%</td>
</tr>
</tbody>
</table>

**LANDWAR->delay_rear**

Description: Distance (km) to which the forward force moves back in delay posture before attempting to form a new defense line.

Default: 20

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar KN-7</td>
<td>delay_rear</td>
<td>25</td>
</tr>
</tbody>
</table>

**LANDWAR->dfdr_flank**

Description: Maximum flank length (km) a defender allows on either side of an LoC before withdrawing the distance specified by LANDWAR->flank_withdr.

Default: 50

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar KN-7</td>
<td>dfdr_flank</td>
<td>35</td>
</tr>
</tbody>
</table>

**LANDWAR->dfnd_pull**

Description: Level of cohesion (%) at which units in a defending command are pulled from the front into a reconstituting mission, unless they are the last unit on the front or the current battle type is breakthrough.

Default: 35

Maximum: 99

Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar KN-7</td>
<td>dfnd_pull</td>
<td>35%</td>
</tr>
</tbody>
</table>
**LANDWAR->dfnd_reconst**

Description: Level of cohesion (%) at which reconstituting units in a defending command are deemed to be ready for transfer to reserves.

Default: 70

Maximum: 100

Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>dfnd_reconst</td>
</tr>
</tbody>
</table>

**LANDWAR->dfnd_replace**

Description: Level of cohesion (%) at which units in a defending command are replaced with a reserve unit, if one is available. The replaced unit assumes a reserve mission.

Default: 50

Maximum: 99

Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>dfnd_replace</td>
</tr>
</tbody>
</table>

**LANDWAR->flank_dense**

Description: Force density required on the flank relative to the front (1.0 would mean that the flank is required to maintain the same density as the front’s).

Default: .5

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>flank_dense</td>
</tr>
</tbody>
</table>

**LANDWAR->flank_lim**

Description: Maximum flank length (km) an attacker allows on either side of an attack before stopping the attack.

Default: 50
Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>flank_lim</td>
</tr>
</tbody>
</table>

**LANDWAR->flank_withdr**

Description: Distance (km) an attacker withdraws when a flank is overexposed (i.e., when there is an exposed flank of length greater than LANDWAR->dldr_flank).

Default: 30

**Example(s):**

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>flank_withdr</td>
</tr>
</tbody>
</table>

**LANDWAR->no_adv**

Description: If turned on, an unopposed defending command can advance to its ordered position.

Default: off

**Example(s):**

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>no_adv</td>
</tr>
</tbody>
</table>

**LANDWAR->nuc_halt**

Description: Time (hours) a command halts after a nuclear strike.

Default: 48

Maximum: 720

Minimum: 0

**Example(s):**

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>nuc_halt</td>
</tr>
</tbody>
</table>

**LANDWAR->pos_pass**

Description: Distance (km) behind CONL (controlled line) that a command assumes a positional defense when a defending command must pass back through it.
Default: 10

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>pos_pass</td>
</tr>
</tbody>
</table>

**LANDWAR->pos_reconst**

Description: If turned on, then reconstituting units of that command assume a Positional Defense mission once their cohesion has returned. If off, the units are transferred to reserves once they have reconstituted.

Default: off

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>pos_reconst</td>
</tr>
</tbody>
</table>

**LANDWAR->rsv_bck_dist**

Description: Maximum distance (km) behind CONL (controlled line) maintained by a force in reserve. If actual distance exceeds this distance, the reserve force will begin to move forward.

Default: 30

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>rsv_bck_dist</td>
</tr>
</tbody>
</table>

**LANDWAR->rsv_fwd_dist**

Description: Minimum distance (km) behind CONL (controlled line) maintained by a force in reserve. If actual distance becomes less than this distance, the reserve force will begin to move back.

Default: 10

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>rsv_fwd_dist</td>
</tr>
</tbody>
</table>
**LANDWAR-\->withd\_pct**

Description: Percentage of a command’s forward force that fights in contact with the attacker when withdrawing.

Default: 15

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>withd_pct</td>
</tr>
</tbody>
</table>

**LANDWAR-\->withd\_rear**

Description: Distance (km) to which the forward force moves back in withdraw posture before attempting to form a new defense line.

Default: 20

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>withd_rear</td>
</tr>
</tbody>
</table>
Q. Parameters for: Ground<>arty_losses

CONTENTS (5 parameters):

LANDWAR->ai_artloss    LANDWAR->bai_artloss
LANDWAR->cas_artloss    LANDWAR->hel_artloss
LANDWAR->lra_artloss

**LANDWAR->ai_artloss**

Description: Alternative to arty_kill data. When THIS parameter is NON-ZERO, it means:

When 1 eq. [equivalent] AI sortie attacks me, use MY value of ai_artloss/100 to decide how many artillery pieces are killed, NOT the attacker’s arty_kills data (which is the normal method).

Note: A value of 100 here means 100% of a piece, i.e., ONE artillery piece gets killed per eq. sortie when ai_artloss = 100.

Default: 0 (meaning use standard arty_kills data)

Maximum: 250

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>ai_artloss 20% (of a vehicle)</td>
</tr>
</tbody>
</table>

**LANDWAR->bai_artloss**

Description: Alternative to arty_kill data. When THIS parameter is NON-ZERO, it means:

When 1 eq. BAI sortie attacks me, use MY value of bai_artloss/100 to decide how many artillery pieces are killed, NOT the attacker’sarty_kills data (which is the normal method).

Note: A value of 100 here means 100% of a piece, i.e., ONE artillery piece gets killed per eq. sortie when bai_artloss = 100.

Default: 0 (meaning use standard arty_kills data)

Maximum: 250

Minimum: 0
Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>landwar</td>
<td>KN-7</td>
</tr>
<tr>
<td></td>
<td>bai_artloss</td>
<td>20% (of a vehicle)</td>
</tr>
</tbody>
</table>

**LANDWAR->cas_artloss**

**Description:** Alternative to arty_kill data. When THIS parameter is NON-ZERO, it means:

When 1 eq. CAS sortie attacks me, use MY value of cas_artloss/100 to decide how many artillery pieces are killed, NOT the attacker’s arty_kills data (which is the normal method).

**Note:** A value of 100 here means 100% of a piece, i.e., ONE artillery piece gets killed per eq. sortie when cas_artloss = 100.

**Default:** 0 (meaning use standard arty_kills data)

**Maximum:** 250

**Minimum:** 0

**Example(s):**

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>landwar</td>
<td>KN-7</td>
</tr>
<tr>
<td></td>
<td>cas_artloss</td>
<td>20% (of a vehicle)</td>
</tr>
</tbody>
</table>

**LANDWAR->hel_artloss**

**Description:** Alternative to arty_kill data. When THIS parameter is NON-ZERO, it means:

When 1 eq. Helo sortie attacks me, use MY value of hel_artloss/100 to decide how many artillery pieces are killed, NOT the attacker’s arty_kills data (which is the normal method).

**Note:** A value of 100 here means 100% of a piece, i.e., ONE artillery piece gets killed per eq. sortie when hel_artloss = 100.

**Default:** 0 (meaning use standard arty_kills data)

**Maximum:** 250

**Minimum:** 0

**Example(s):**

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>landwar</td>
<td>KN-7</td>
</tr>
<tr>
<td></td>
<td>hel_artloss</td>
<td>20% (of a vehicle)</td>
</tr>
</tbody>
</table>

**LANDWAR->ira_artloss**

**Description:** Alternative to arty_kill data. When THIS parameter is NON-ZERO, it means:
When 1 eq. LRA volley attacks me, use MY value of lra_artloss/100 to decide how many artillery pieces are killed, NOT the attacker’s arty_kills data (which is the normal method).

Note: A value of 100 here means 100% of a piece, i.e., ONE artillery piece gets killed per eq. volley when lra_artloss = 100.

Default: 0 (meaning use standard arty_kills data)

Maximum: 250

Minimum: 0

**Example(s):**

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>lra_artloss</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20% (of a vehicle)</td>
</tr>
</tbody>
</table>
R. Parameters for: Ground<>internal_battle

CONTENTS (3 parameters):

ITM->overrun_mult
LANDWAR->piecemeal
LANDWAR->rear_diver

**ITM->overrun_mult**

Description: EED multiplier for overrun ground forces.

Default: .50

Maximum: 1.0

Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Theater Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>overrun_mult</td>
</tr>
</tbody>
</table>

**LANDWAR->piecemeal**

Description: Percentage of overrun forces that need to be engaged.

Default: 100

Maximum: 100

Minimum: 10

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar CFCK</td>
<td>piecemeal</td>
<td>80</td>
</tr>
</tbody>
</table>

**LANDWAR->rear_diver**

Description: Relative loss in forward EED strength per EED of enemy strength operating in the rear. (This loss is treated as a diversion of strength to deal with the forces in the rear.)

Default: .5
Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>rear_diver</td>
</tr>
</tbody>
</table>
S. Parameters for: Ground<>battle_intensity

CONTENTS (8 parameters):

- LANDWAR->high_dldr
- LANDWAR->high_move
- LANDWAR->low_er
- LANDWAR->max_int_days
- LANDWAR->high_er
- LANDWAR->low_dldr
- LANDWAR->low_move
- LANDWAR->resup_int

**LANDWAR->high_dldr**
Description: Defender’s loss rate multiplier at high combat intensity.
Default: 1.4
Example(s):

```
Command  Keyword      Value
set landwar KN-5C high_dldr 1.4
```

**LANDWAR->high_er**
Description: Exchange rate multiplier at high combat intensity.
Default: 1.4
Example(s):

```
Command  Keyword      Value
set landwar KN-5C high_er 1.3
```

**LANDWAR->high_move**
Description: Movement rate multiplier at high combat intensity.
Default: 1.4
Example(s):

```
Command  Keyword      Value
set landwar KN-5C high_move 1.5
```
**LANDWAR->low_ddlr**

Description: Defender's loss rate multiplier at low combat intensity.

Default: 0.5

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>low_ddlr</td>
</tr>
</tbody>
</table>

**LANDWAR->low_er**

Description: Exchange rate multiplier at low combat intensity.

Default: 0.5

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>low_er</td>
</tr>
</tbody>
</table>

**LANDWAR->low_move**

Description: Movement rate multiplier at low combat intensity.

Default: 0.5

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>low_move</td>
</tr>
</tbody>
</table>

**LANDWAR->max_int_days**

Description: Maximum number of days that a high-intensity attack can be maintained.

Default: 5

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>max_int_days</td>
</tr>
</tbody>
</table>

**LANDWAR->resup_int**

Description: Days of inactivity required before a command can resume high-intensity attacks.
Default: 10
Maximum: 30
Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>resup_int</td>
</tr>
</tbody>
</table>
T. Parameters for: Ground<>attack_requirements

CONTENTS (4 parameters):

LANDWAR->attk_join  LANDWAR->attk_main
LANDWAR->attk_pin    LANDWAR->attk_spt

LANDWAR->attk_join
Description: The force ratio required for a join-attack mission.
Default: 1.2
Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>attk_join</td>
</tr>
</tbody>
</table>

LANDWAR->attk_main
Description: The force ratio required for a main attack or counter-attack.
Default: 1.5
Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>attk_main</td>
</tr>
</tbody>
</table>

LANDWAR->attk_pin
Description: The force ratio required for a pinning attack.
Default: 1.25
Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>attk_pin</td>
</tr>
</tbody>
</table>
**LANDWAR->attk_spt**

Description: The force ratio required for a supporting attack.

Default: 1.1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar KN-5C attk_spt</td>
<td></td>
<td>1.5</td>
</tr>
</tbody>
</table>
U. Parameters for: Ground<>breakthrough

CONTENTS (10 parameters):

- LANDWAR->arty_escape_pct
- LANDWAR->barrier_loss
- LANDWAR->brk_ex_ratio
- LANDWAR->brk_ratio
- LANDWAR->recvr_density
- LANDWAR->arty_trap_pct
- LANDWAR->brk_density
- LANDWAR->brk_loss
- LANDWAR->delay_density
- LANDWAR->withd_density

**LANDWAR->arty_escape_pct**

Description: Percentage of a positional maneuver force’s artillery that transfers to its positional command’s separate artillery force when the maneuver force is overrun at the command’s forward battle.

Default: 70

Maximum: 100

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>oct landwar</td>
<td>CFCK  arty_escape_pct</td>
<td>45%</td>
</tr>
</tbody>
</table>

**LANDWAR->arty_trap_pct**

Description: Percentage of a positional command’s separate artillery that transfers to a positional command’s forward maneuver force when the maneuver force is overrun at the command’s forward battle.

Default: 30

Maximum: 100

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>CFCK  arty_trap_pct</td>
<td>45%</td>
</tr>
</tbody>
</table>
**LANDWAR->barrier_loss**

Description: One-time percentage attrition to a defender pushed out of a prepared defensive position. Attacker losses are given by the LANDWAR->brk_ex_ratio.

When such an adjudication occurs, the LANDWAR->barrier_loss of the DEFENDING command is used for defender losses, and the LANDWAR->brk_ex_ratio of the DEFENDING command is used for calculating attacker losses.

Default: 5

**Example(s):**

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>barrier_loss 10%</td>
</tr>
</tbody>
</table>

**LANDWAR->brk_density**

Description: Defender’s SED/km density below which a breakthrough occurs while defending (brk_density>recvr_density).

Default: .01

**Example(s):**

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>brk_density 0.1</td>
</tr>
</tbody>
</table>

**LANDWAR->brk_ex_ratio**

Description: The exchange ratio for calculating the attacker’s losses from the special losses taken by the defender suffering a breakthrough (parameters break_loss and barrier_loss).

When such an adjudication occurs, the brk_ex_ratio of the DEFENDING command is used for calculating attacker losses.

**Example(s):**

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>brk_ex_ratio 1.5</td>
</tr>
</tbody>
</table>

**LANDWAR->brk_loss**

Description: One-time percentage attrition to a defender suffering a breakthrough. Attacker losses are calculated using the LANDWAR->brk_ex_ratio.

When such an adjudication occurs, the LANDWAR->brk_loss of the DEFENDING command is used for defender losses, and the LANDWAR->brk_ex_ratio of the DEFENDING command is used for calculating attacker losses.
Default: 5

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>brk_loss</td>
</tr>
</tbody>
</table>

**LANDWAR->brk_ratio**

Description: Attacker/defender TED force ratio required to achieve a breakthrough if the attacker SED/km density is below what is necessary to cover the terrain width (brk_density * brk_fr).

Default: 2.0

Maximum: 100.0

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Force Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>brk_ratio 2.0</td>
</tr>
</tbody>
</table>

**LANDWAR->delay_density**

Description: Defender’s SED/km density below which a breakthrough occurs while delaying.

Default: .005

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>delay_density 0.1</td>
</tr>
</tbody>
</table>

**LANDWAR->recurr_density**

Description: SED/km density at which a defender in the exploitation phase of a breakthrough can establish a line of defense (recurr_density>brk_density).

Default: .05

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>recvr_density 0.1</td>
</tr>
</tbody>
</table>
**LANDWAR->withd_density**

Description: Defender's SED/km density below which a breakthrough occurs while withdrawing.

Default: .001

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>withd_density</td>
</tr>
</tbody>
</table>
V. Parameters for: Ground<>front_limits

CONTENTS (4 parameters):

LANDWAR->armor_min_fwd
LANDWAR->arty_min_fwd
LANDWAR->infty_min_fwd
LANDWAR->keep_up_mult

**LANDWAR->armor_min_fwd**

Description: Minimum number of armored vehicles that can be kept at the front at the maximum rate of advance. See the function ITM-Congestion in the Abel file sfs.A for its use.

Default: 80
Maximum: 1000
Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>armor_min_fwd</td>
</tr>
</tbody>
</table>

**LANDWAR->arty_min_fwd**

Description: Minimum number of artillery that can be kept at the front at the maximum rate of advance. See the function ITM-Congestion in the Abel file sfs.A for its use.

Default: 200
Maximum: 1000
Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>arty_min_fwd</td>
</tr>
</tbody>
</table>
**LANDWAR->infty_min_fwd**

Description: Minimum number of infantry weapons that can be kept at the front at the maximum rate of advance. See the function ITM-Congestion in the Abel file slsA for its use.

Default: 5000

Maximum: 10000

Minimum: 1

**Example(s):**

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>infty_min_fwd</td>
</tr>
</tbody>
</table>

**LANDWAR->keep_up_mult**

Description: Multiplier regarding the ability of arty to keep up with rapid advances.

Default: 1.0

Maximum: 10.0

Minimum: 0.01

**Example(s):**

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>keep_up_mult</td>
</tr>
</tbody>
</table>
W. Parameter for: Ground<>log_base

CONTENTS (1 parameter):

LANDWAR->log_move

LANDWAR->log_move

Description: Maximum distance (km) between logistics base and the command’s MOFL. When this distance is reached, the command will halt and move the logistics base forward.

Default: 50

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-7</td>
<td>log_move</td>
</tr>
</tbody>
</table>
X. Parameters for: Ground<>unit_resup/reconst

CONTENTS (22 parameters):

ITM->dos_disrupt  ITM->tail_atk
ITM->tail_hold    ITM->tail_min
ITM->tail_spd     LANDWAR->attk_hos
LANDWAR->tail_half MATERIEL->days_recover
MATERIEL->days_repair MATERIEL->gndforce_cap
MATERIEL->intense_mult MATERIEL->local_repair
MATERIEL->max_replace MATERIEL->min_losses
MATERIEL->network_cap MATERIEL->rear_repair
MATERIEL->reorder_point MATERIEL->replace_hrs
MATERIEL->supply_loss MATERIEL->supply_mult
MATERIEL->supply_objective MATERIEL->supply_rate

**ITM->dos_disrupt**

Description: Delay in delivery of ammo resupply caused by 1 sortie or volley, in ED days of supply. It is used to model the disruption of the supply system caused by air attack.

Defaults: CAS BAI AI Helo Arty
           .001 .001 .001 .001 .001

Maximum: 1.00
Minimum: .000

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>CAS</th>
<th>BAI</th>
<th>AI</th>
<th>Helo</th>
<th>Arty</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>itm CFCK</td>
<td>dos_disrupt</td>
<td>.002</td>
<td>.004</td>
<td>.005</td>
<td>.002</td>
</tr>
</tbody>
</table>
**ITM->tail_atk**

Description: Maximum length of logistics tail (km) to launch a new attack. If the current length exceeds this length in a command in which an attack is not already ongoing, an attack cannot be initiated until the tail shortens.

Default: 40 All Theaters

Maximum: 500

Minimum: 5

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Kms</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>DPRK</td>
<td>20</td>
</tr>
</tbody>
</table>

**ITM->tail_hold**

Description: Maximum length (km) of logistics tail before the front is ordered to stop attacking or advancing.

Default: 200 All Theaters

Maximum: 5000

Minimum: 5

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Kms</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>DPRK</td>
<td>190</td>
</tr>
</tbody>
</table>

**ITM->tail_min**

Description: Minimum length of logistics tail, in kms. The support forces in a command strive to shorten the tail length to this value.

Default: 20 All Theaters

Maximum: 50

Minimum: 5

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Kms</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>DPRK</td>
<td>10</td>
</tr>
</tbody>
</table>
**ITM->tail_spd**

Description: Maximum speed of the logistics tail (km per day). It is the rate at which the current tail length can shorten. Setting tail_spd to 500 effectively turns off the logistics tail method.

Default: 10 All Theaters

Maximum: 500

Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Kms/Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>DPRK</td>
<td>tail_spd</td>
</tr>
</tbody>
</table>

**LANDWAR->attk_hos**

Description: Minimum hours of supply that command's frontal forces must have on hand if they are to attack this delta-t.

Default: 24 hours for all commands

Maximum: 250

Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Kms</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>attk_hos</td>
</tr>
</tbody>
</table>

**LANDWAR->tail_half**

Description: Length of log tail beyond the minimum (LANDWAR->tail_min) at which the flow of supplies is reduced by 50%.

Default: 50 All commands

Maximum: 500

Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Kms</th>
</tr>
</thead>
<tbody>
<tr>
<td>set landwar</td>
<td>KN-5C</td>
<td>tail_half</td>
</tr>
</tbody>
</table>
**MATERIEL->days_recover**

Description: The number of days needed for a ground force to recover 10% of lost cohesion, depending on the force’s current combat posture.

Postures are: contact, non-contact, reconstituting, and cut-off

Default: 1000, 2, 3, 1000

Maximum: 1000

Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Posture</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>days_recover non-contact</td>
<td>.04</td>
<td></td>
</tr>
</tbody>
</table>

**MATERIEL->days_repair**

Description: The number of days for REAR supporting maintenance to repair a weapon. Types of weapons are:

- tank
- ifv
- apc
- hvy_arv
- lgt_arv
- lr_atgm
- sr_atgm
- sm_mortar
- sm_arms
- sp_arty
- td_arty
- gded_adef
- oir_adef
- atk_helo

Default: too numerous to list here

Maximum: 20

Minimum: 1

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Weapon</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>days_repair tank</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

**MATERIEL->gndforce_cap**

Description: The maximum number of days of supply that a force can receive per day.

Default: 2.0

Maximum: 9999

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>gndforce_cap</td>
<td>5</td>
</tr>
</tbody>
</table>
MATERIEL->intense_mult

Description: Multiplier of consumption when intense combat obtains.

Default: 1.5

Maximum: 5.0

Minimum: 1.0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK intense_mult 1.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MATERIEL->local_repair

Description: The fraction of total losses that are repairable by the losing force's organic maintenance capability, by weapon type. Weapon types are:

- tank
- ifv
- apc
- hvy_arv
- lgt_arv
- lr_atgm
- sr_atgm
- sm_mortar
- sm_arms
- sp_artty
- ld_artty
- gded_adef
- oir_adef
- atk_helo

Note: The value of local_repair + rear_repair cannot exceed 1.0 for any weapon type. Therefore, \([1.0 - (\text{local_repair + rear_repair})]\) is K-kills.

Default: too numerous to list here

Maximum: .99

Minimum: 0.0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Weapon</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK local_repair tank .25</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MATERIEL->max_replace

Description: The maximum fraction of original-strength weapons that can be issued as replacements to a ground force in a day, depending on the force's current combat posture.

Postures are: contact, non-contact, reconstituting, and cut-off

Default: .02, .03, .05, .01

Maximum: 1.0

Minimum: 0
Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Posture</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>max_replace non-contact</td>
<td>.04</td>
<td></td>
</tr>
</tbody>
</table>

**MATERIEL->min_losses**

Description: The fraction of losses that must occur before replacements are issued.

Default: .05

Maximum: .95

Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>min_losses</td>
<td>.03</td>
</tr>
</tbody>
</table>

**MATERIEL->network_cap**

Description: The maximum number of days of supply that a theater can deliver per day.

Default: 9999 (no limit)

Maximum: 9999

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>network_cap</td>
<td>40</td>
</tr>
</tbody>
</table>

**MATERIEL->rear_repair**

Description: The fraction of total losses that are repairable by the losing force’s rear-supporting maintenance capability, by weapon type. Weapon types are:

- tank
- ifv
- apc
- hvy_arv
- lgt_arv
- lr_atgm
- sr_atgm
- sm_mortar
- sm_arms
- sp_arty
- td_arty
- gded adef
- cir adef
- atk helo

Note: The value of local_repair + rear_repair cannot exceed 1.0 for any weapon type. Therefore, \[[1.0 - (local_repair + rear_repair)]\] is K-kills.

Default: too numerous to list here

Maximum: .99
Minimum: 0.0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Weapon</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>rear_repair</td>
<td>tank</td>
<td>.25</td>
</tr>
</tbody>
</table>

**MATERIEL->reorder_point**

Description: Number of days of supply at or below which it is time for the supply model to simulate delivery of more supplies to a unit (in days of supply).

Default: 4.0

Maximum: 20.0

Minimum: 1.0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>reorder_point</td>
<td>3.0</td>
</tr>
</tbody>
</table>

**MATERIEL->replace_hrs**

Description: The number of hours after H-hour required before the first replacement weapon can reach a ground force.

Default: 72

Maximum: 10000

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>replace_hrs</td>
<td>192</td>
</tr>
</tbody>
</table>

**MATERIEL->supply_loss**

Description: Analyst-scripted extra losses of supply during delivery. This fraction is taken against every delivery of ed_supply.

Default: 0.0

Maximum: 1.0

Minimum: 0.0
Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>supply_loss</td>
<td>.08</td>
</tr>
</tbody>
</table>

**MATERIEL-->supply_mult**

Description: Analyst multiplier of all theater supply consumption.

Default: 1.0

Maximum: 5.0

Minimum: .1

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>supply_mult</td>
<td>1.2</td>
</tr>
</tbody>
</table>

**MATERIEL-->supply_objective**

Description: Number of days of supply desired for a force, in days of supply.

Default: 5.0

Maximum: 20.0

Minimum: 2.0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set materiel CFCK</td>
<td>supply_objective</td>
<td>3.0</td>
</tr>
</tbody>
</table>

**MATERIEL-->supply_rate**

Description: Number of days of supply (DoS) consumed per day at the specified posture, expressed as a percentage of the standard consumption rate. For example, if the basic ground force supply inventory in your database were expressed in defend DoS, you would state the supply_rate at the defend posture as 100%, and at all other postures relative to that, say, 110% for main-attack if one expends 10% more at that posture than at a defend posture.
The allowable postures and their default DoS percentages are (all commands):

<table>
<thead>
<tr>
<th>Mission</th>
<th>DoS</th>
<th>Mission</th>
<th>DoS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main-Attack</td>
<td>100</td>
<td>Defend</td>
<td>120</td>
</tr>
<tr>
<td>Supporting-Attack</td>
<td>80</td>
<td>Defend-delay</td>
<td>120</td>
</tr>
<tr>
<td>Pinning-Attack</td>
<td>50</td>
<td>Defend-Withdraw</td>
<td>120</td>
</tr>
<tr>
<td>Joining-Attack</td>
<td>50</td>
<td>Delay</td>
<td>40</td>
</tr>
<tr>
<td>Counterattack</td>
<td>100</td>
<td>Withdraw</td>
<td>40</td>
</tr>
<tr>
<td>Penetration-Attack</td>
<td>100</td>
<td>Forced-Withdraw</td>
<td>40</td>
</tr>
<tr>
<td>Follow</td>
<td>5</td>
<td>Break-Out</td>
<td>100</td>
</tr>
<tr>
<td>Rear-Echelon</td>
<td>5</td>
<td>Positional</td>
<td>120</td>
</tr>
<tr>
<td>Clean-up</td>
<td>100</td>
<td>Artillery</td>
<td>70</td>
</tr>
<tr>
<td>AirDrop</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AirAssault</td>
<td>100</td>
<td>No-Combat</td>
<td>1</td>
</tr>
</tbody>
</table>

Default: see table above

Maximum: 250

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Posture</th>
<th>New DoS</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>materiel</td>
<td>CFCK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>supply_rate</td>
<td>defend</td>
<td>90%</td>
</tr>
</tbody>
</table>
Y. Parameters for: Ground<>air_to_ground

CONTENTS (12 parameters):

ITM->arty_kills  ITM->dos_disrupt
ITM->ed_delay_hrs  ITM->infty_allocs
ITM->infty_kills  ITM->jstars_kills
ITM->kill_mult  ITM->min_flot_kpd
ITM->msl_kill_move  ITM->msl_kill_stat
ITM->rekills  ITM->vehicle_kills

ITM->arty_kills

Description: Enemy artillery killed by target posture for 1 standard equivalent sortie (1 standard engagement for long-range artillery).

Target postures are: attack  defend  delay  moving

Attacking mission are: CAS, BAI, AI, Helo, Arty

Defaults: Posture  CAS  BAI  AI  Helo  Arty
attack  .40  .25  .25  .40  .25
defend  .40  .25  .25  .40  .25
delay  .40  .25  .25  .40  .25
moving  .40  .25  .25  .40  .25

Maximum: 100
Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Target Posture</th>
<th>5 New Values for:</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>arty_kills moving</td>
<td>1.2 .7 .8 1.3 .9</td>
<td></td>
</tr>
</tbody>
</table>
**ITM->dos_disrupt**

Description: Delay in delivery of ammo resupply caused by 1 sortie or volley (in ED days of supply). This delay is used to model the disruption of the supply system by air attack.

Defaults: CAS BAI AI Helo Arty  
0.001 0.001 0.001 0.001

Maximum: 1.00  
Minimum: 0.001  

Example(s):

```
  Theater   Keyword      5 New Values for:  CAS   BAI   AI   Helo   Arty
  set itm  CFCK   dos_disrupt  0.002  0.004  0.005  0.002  0.003
```

**ITM->ed_delay_hrs**

Description: Delay caused by 1 sortie or volley of attack per ED of moving target (per engagement for artillery engagement).

Defaults: CAS BAI AI Helo Arty  
0.083 0.040 0.040 0.083 0.040

Maximum: 1.00  
Minimum: 0.001  

Example(s):

```
  Theater   Keyword      5 New Values for:  CAS   BAI   AI   Helo   Arty
  set itm  CFCK   ed_delay_hrs  0.075  0.045  0.021  0.080  0.055
```

**ITM->infty_allocs**

Description: Number of infantry given weight equal to one vehicle when allocating between vehicles and infantry the sorties or engagements attacking a ground unit.

Defaults: CAS BAI AI Helo Arty  
50 50 50 20 50

Maximum: 100  
Minimum: 0
Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>CAS</th>
<th>BAI</th>
<th>AI</th>
<th>Helo</th>
<th>Arty</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>CFCK</td>
<td>infinity_allocs</td>
<td>20.0</td>
<td>30.0</td>
<td>10.0</td>
<td>25.0</td>
</tr>
</tbody>
</table>

**ITM->infty_kills**

Description: Multiplies ITM->vehicle_kills to give the number of infantry killed by a friendly equivalent sortie or engagement.

Defaults:  
CAS  | BAI  | AI   | Helo | Arty |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>50</td>
<td>50</td>
<td>20</td>
<td>50</td>
</tr>
</tbody>
</table>

Maximum: 100.0
Minimum: .5

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>CAS</th>
<th>BAI</th>
<th>AI</th>
<th>Helo</th>
<th>Arty</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>CFCK</td>
<td>infinity_kills</td>
<td>20.0</td>
<td>30.0</td>
<td>10.0</td>
<td>25.0</td>
</tr>
</tbody>
</table>

**ITM->jstars_kills**

Description: Multiplier of air-to-ground kill rates when a JSTARS package is flying.

Default: 1.1
Maximum: 10.0
Minimum: 1.0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm</td>
<td>CFCK</td>
<td>jstars_kills</td>
</tr>
</tbody>
</table>

**ITM->kill_mult**

Description: Analyst multiplier of all other air-to-ground or LR-artillery kill data.

Default: 1.0 for CAS, BAI, AI, Helo
Maximum: 10.0
Minimum: .01
Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>CAS</th>
<th>BAI</th>
<th>AI</th>
<th>Helo</th>
<th>Arty</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>kill_mult</td>
<td>1.50</td>
<td>3.30</td>
<td>1.0</td>
<td>2.20</td>
<td>1.1</td>
</tr>
</tbody>
</table>

**ITM->min_flot_kpd**

Description: Minimum FLOT speed below which the delay effects of CAS, BAI, and Helo interdiction have no effect.

Default: 5

Maximum: 250

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>min_flot_kpd</td>
<td>5</td>
</tr>
</tbody>
</table>

**ITM->msl_kill_move**

Description: Enemy launchers killed per 1 standard equivalent sortie delivered when AI targets a missile force that is moving (deploying).

See also ITM->msl_kill_stat.

Default: .1

Maximum: 10.0

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Per Eq.Sort</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>msl_kill_move</td>
<td>.05</td>
</tr>
</tbody>
</table>

**ITM->msl_kill_stat**

Description: Enemy launchers killed per 1 standard equivalent sortie delivered when AI targets a missile force that is stationary (not deploying).

See also ITM->msl_kill_move.

Default: 1.0
Maximum: 10.0
Minimum: 0

Example(s):

```
  Theater Keyword       Per Eq.Sort
  set itm CFCK          msl_kill_stat   .5
```

**ITM->rekills**

Description: The probability that any previously killed vehicles in a target force are considered to be live by the attacker. If a target has $P$ live vehicles and $Q$ dead vehicles, the attacker's capability will be spread evenly across $P + ITM->rekills \times Q$ vehicles.

Note: This fledgling model is now limited to assessing vehicle kills only. It does **not** yet affect the allocation of sortsies (volleys) among vehicle and non-vehicle targets.

For example, if the raw calculations are that $V$ vehicles are to be killed in a target with $N$ live vehicles and $M \geq N$ vehicles total, the number of live kills that will be adjudicated is:

$$\text{live\_kills} = \frac{V \times N}{(N + ITM->rekills \times (M - N))}$$

Target postures are: attack, defend, delay, moving
Attacking mission are: CAS, BAI, AI, Helo, Arty

Defaults: Posture CAS BAI AI Helo Arty
```
  attack    .1 .1 .1 .1 .0
  defend    .2 .2 .2 .2 .0
  delay     .1 .1 .1 .1 .0
  moving    .1 .1 .1 .1 .0
```

Maximum: 1.0
Minimum: 0

Example(s):

```
  Theater Keyword Target Posture 5 New Values for:
  set itm CFCK rekills moving    .3 .2 .4 .2 .1
```

**ITM->vehicle_kills**

Description: Enemy vehicles killed by target posture for 1 standard equivalent sortie (1 standard volley for long-range artillery).

Target postures are: attack, defend, delay, moving
Attacking mission are: CAS, BAI, AI, Helo, Arty

Defaults: Posture | CAS | BAI | AI | Helo | Arty
---|---|---|---|---|---
attack | 1.5 | 1.0 | 1.0 | .9 | 1.0
defend | .6 | .4 | .4 | .4 | .4
delay | 1.5 | 1.0 | 1.0 | .9 | 1.0
moving | 1.5 | 1.5 | 1.5 | .2 | 1.5

Maximum: 100
Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Target Posture</th>
<th>5 New Values for:</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>vehicle_kills</td>
<td>moving</td>
<td>CAS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.2</td>
</tr>
</tbody>
</table>
Z. Parameters for: Ground<>attack_helos

CONTENTS (20 parameters):

HELOS->flot_dist   HELOS->helo_arty
HELOS->hel_range   HELOS->hel_req_arm
HELOS->hel_sort    HELOS->hel_timing
HELOS->hvuln_atk   HELOS->hvuln_base
HELOS->hvuln_def   HELOS->night_kill
HELOS->night_vuln  HELOS->wx_kill_pct
HELOS->wx_sort_pct ITM->arty_kills
ITM->ed_delay_hrs  ITM->infty Allocs
ITM->infty_kills   ITM->kill_mult
ITM->rekills       ITM->vehicle_kills

HELOS->flot_dist

Description: Maximum kilometers forward of a supported command front (MOFL or FLOT) that helos seek targets IF no in-contact targets are available. However, targets will not be attacked beyond the theater command’s BAI range, regardless of the value of this parameter.

See ITM->vehicle_kills in Appendix Y for helo kill data.

Default: 50

Maximum: 1000

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>helos</td>
<td>KS_11</td>
</tr>
<tr>
<td></td>
<td>flot_dist</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>60</td>
</tr>
</tbody>
</table>

HELOS->helo_arty

Description: Percentage of attack helicopter sorties that target artillery only. The rest attack maneuver weapons and air defense weapons.

Default: 0
Maximum: 100
Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>helos</td>
<td>KSCC</td>
</tr>
</tbody>
</table>

**HELOS->hel_range**

Description: Maximum one-way distance that this command’s attack helicopters can range (from parent unit to target unit), in km.

See ITM->vehicle_kills in Appendix Y for helo kill data.

Default: 200.0
Maximum: 1000.0
Minimum: 50.0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>helos</td>
<td>KS_11</td>
</tr>
</tbody>
</table>

**HELOS->hel_req_arm**

Description: Minimum number of vehicle targets in an enemy unit if the unit is to be considered a viable target for attack helicopters.

See ITM->vehicle_kills in Appendix Y for helo kill data.

Default: 20
Maximum: 500
Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>helos</td>
<td>KS_11</td>
</tr>
</tbody>
</table>

**HELOS->hel_sort**

Description: Number of sorties per day to be flown by each attack helicopter in ground forces assigned to this command.

See ITM->vehicle_kills in Appendix Y for helo kill data.
Default: 3.0
Maximum: 20.0
Minimum: 0.0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>helos KS_11 hel_sort</td>
<td>2.7</td>
</tr>
</tbody>
</table>

**HELOS->hel_timing**

Description: The percentage of a command’s total attack helicopter sorties that will be flown in each 4-hour period of the ITM day.

Note: This percentage is based on assigned command, not supported command.

See ITM->vehicle_kills in Appendix Y for helo kill data.

Default: 0 0 40 30 30 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>New Percent for Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>helos KS_11 hel_timing</td>
<td>10 20 30 20 20 0</td>
</tr>
</tbody>
</table>

**HELOS->hvunl_atk**

Description: Fraction of attack helicopter sorties killed by enemy when the helos are flown against a attacking (moving) force, and when the target size is exactly HELOS->hvunl_base TEDs (see below).

See HELOS->hvunl_def, and ITM->vehicle_kills in Appendix Y for helo kill data.

Default: .04

Maximum: 1.00

Minimum: .001

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>helos KS_11 hvunl_atk</td>
<td>.05</td>
</tr>
</tbody>
</table>
**HELOS->hvuln_base**

Description: Number of TEDs (density) assumed in the target area, and on which the HELOS->hvuln_atk and HELOS->hvuln_def are based. Helicopter losses increase inversely with this value.

See ITM->vehicle_kills in Appendix Y for helo kill data.

Default: .40

Maximum: 10.0

Minimum: .001

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set helos KS_11 hvuln_base</td>
<td>.6</td>
<td></td>
</tr>
</tbody>
</table>

**HELOS->hvuln_def**

Description: Fraction of attack helicopter sorties killed by enemy when the helos are flown against a defending (stationary) force, and when the target size is exactly HELOS->hvuln_base TEDs.

See HELOS->hvuln_atk, and ITM->vehicle_kills in Appendix Y for helo kill data.

Default: .03

Maximum: 1.00

Minimum: .001

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set helos KS_11 hvuln_def</td>
<td>.05</td>
<td></td>
</tr>
</tbody>
</table>

**HELOS->night_kill**

Description: Multiplier of helicopter kills during night periods.

Default: 1.0

Maximum: 100.0

Minimum: 0
Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set helos</td>
<td>KS_11</td>
<td>night_kill</td>
</tr>
</tbody>
</table>

**HELOS->night_vuln**

Description: Multiplier of helicopter losses during night periods.

Default: 1.0

Maximum: 100.0

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>New Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>set helos</td>
<td>KS_11</td>
<td>night_vuln</td>
</tr>
</tbody>
</table>

**HELOS->wx_kill_pct**

Description: Percentage of air-ground effects that will obtain (because of the weather).

Note: Value at midnight affects mission results all day long. Also, a separate parameter exists in the airwar table.

Default: 100

Maximum: 100

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>set helos</td>
<td>KS_CC</td>
<td>70</td>
</tr>
</tbody>
</table>

**HELOS->wx_sort_pct**

Description: Percentage of sorties that will launch (because of weather considerations).

Note: Value at midnight affects missions all day long. Also, a separate parameter exists in the airwar table.

Default: 100

Maximum: 200

Minimum: 0
Example(s):

<table>
<thead>
<tr>
<th>Command</th>
<th>Keyword</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>helos</td>
<td>KSCC wx_sort_pct 70</td>
</tr>
</tbody>
</table>

**ITM->arty_kills**

Description: Enemy artillery killed by target posture for 1 standard equivalent sortie (1 standard engagement for long-range artillery).

Target postures are: attack, defend, delay, moving

Attacking mission are: CAS, BAI, AI, Helo, Arty

Defaults: Posture CAS, BAI, AI, Helo, Arty

- attack: 0.40, 0.25, 0.25, 0.40, 0.25
- defend: 0.40, 0.25, 0.25, 0.40, 0.25
- delay: 0.40, 0.25, 0.25, 0.40, 0.25
- moving: 0.40, 0.25, 0.25, 0.40, 0.25

Maximum: 100

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Target Posture</th>
<th>5 New Values for:</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>itm</td>
<td>CFCK</td>
<td>1.2, .7, .8, 1.3, .9</td>
</tr>
</tbody>
</table>

**ITM->ed_delay_hrs**

Description: Delay caused by 1 sortie or volley of attack per ED of moving target (per engagement for artillery engagement).

Defaults: CAS, BAI, AI, Helo, Arty

- .083, .040, .040, .083, .040

Maximum: 1.00

Minimum: .001
Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>5 New Values for:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CAS   BAI   AI   Helo   Arty</td>
</tr>
</tbody>
</table>
set itm CFCK ed_delayhrs .075 .045 .021 .080 .055

**ITM->infty Allocs**

Description: Number of infantry given weight equal to one vehicle when allocating between vehicles and infantry the sorties or engagements attacking a ground unit.

Defaults: CAS BAI AI Helo Arty

50 50 50 20 50

Maximum: 100

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>5 New Values for:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CAS   BAI   AI   Helo   Arty</td>
</tr>
</tbody>
</table>
set itm CFCK infty_allocs 20.0 30.0 10.0 25.0 20.0

**ITM->infty Kills**

Description: Multiplies ITM->vehicle_kills to give the number of infantry killed by a friendly equivalent sortie or engagement.

Defaults: CAS BAI AI Helo Arty

50 50 50 20 50

Maximum: 100.0

Minimum: .5

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>5 New Values for:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CAS   BAI   AI   Helo   Arty</td>
</tr>
</tbody>
</table>
set itm CFCK infty_kills 20.0 30.0 10.0 25.0 20.0

**ITM->kill Mult**

Description: Analyst multiplier of all other air-to-ground or LR-artillery kill data.

Default: 1.0 for CAS, BAI, AI, Helo

Maximum: 10.0
Minimum: .01

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>5 New Values for:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CAS</td>
</tr>
<tr>
<td>set itm CFCK</td>
<td>kill_mult</td>
<td>1.50</td>
</tr>
</tbody>
</table>

**ITM->rekills**

Description: The probability that any previously killed vehicles in a target force are considered to be live by the attacker. If a target has P live vehicles and Q dead vehicles, the attacker’s capability will be spread evenly across P + ITM->rekills × Q vehicles.

Note: This fledgling model is now limited to assessing vehicle kills only. It does not yet affect the allocation of sorties (volleys) among vehicle and non-vehicle targets.

For example, if the raw calculations are that V vehicles are to be killed in a target with N live vehicles and M >= N vehicles total, the number of live kills that will be adjudicated is:

\[
\text{live_kills} = V \times N / (N + \text{ITM->rekills} \times (M - N))
\]

Target postures are: attack, defend, delay, moving

Attacking mission are: CAS, BAI, AI, Helo, Arty

Defaults: Posture CAS BAI AI Helo Arty

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>attack</td>
<td>.1</td>
<td>.1</td>
<td>.1</td>
<td>.1</td>
<td>.0</td>
</tr>
<tr>
<td>defend</td>
<td>.2</td>
<td>.2</td>
<td>.2</td>
<td>.2</td>
<td>.0</td>
</tr>
<tr>
<td>delay</td>
<td>.1</td>
<td>.1</td>
<td>.1</td>
<td>.1</td>
<td>.0</td>
</tr>
<tr>
<td>moving</td>
<td>.1</td>
<td>.1</td>
<td>.1</td>
<td>.1</td>
<td>.0</td>
</tr>
</tbody>
</table>

Maximum: 1.0

Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Target Posture</th>
<th>5 New Values for:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>CAS</td>
</tr>
<tr>
<td>set itm CFCK</td>
<td>rekills</td>
<td>moving</td>
<td>.3</td>
</tr>
</tbody>
</table>

**ITM->vehicle_kills**

Description: Enemy vehicles killed by target posture for 1 standard equivalent sortie (1 standard volley for long-range artillery).
Target postures are: attack, defend, delay, moving
Attacking mission are: CAS, BAI, AI, Helo, Arty

Defaults: Posture CAS BAI AI Helo Arty
attack 1.5 1.0 1.0 .9 1.0
defend .6 .4 .4 .4 .4
delay 1.5 1.0 1.0 .9 1.0
moving 1.5 1.5 1.5 .2 1.5

Maximum: 100
Minimum: 0

Example(s):

<table>
<thead>
<tr>
<th>Theater</th>
<th>Keyword</th>
<th>Target Posture</th>
<th>5 New Values for:</th>
</tr>
</thead>
<tbody>
<tr>
<td>set itm CFCK</td>
<td>vehicle_kills</td>
<td>moving</td>
<td>CAS BAI AI Helo Arty</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.2 .7 .8 1.3 .9</td>
</tr>
</tbody>
</table>