

Command Mega-FAQ

ver 1.04 (Build 554)

Welcome to the [Command: Modern Air / Naval Operations](#) Mega-FAQ. This is a collection of common question and answers from the various Command forums and the beta group. No credits have been given below as multiple questions and answers have been merged into one, so naming each contributor would be difficult if not impossible. We'd like to use the opportunity to thank everyone (whose forums posts, private messages and mails we have shamelessly copied) once again for their contributions to the FAQ and to Command's continuing success.

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General

What is 'Command: Modern Air / Naval Operations'?

Command: Modern Air / Naval Operations, also known as C:MA/NO or CMANO, is the most realistic and accurate air/naval warfare simulator available on the commercial market. The simulator puts the player in charge of air and naval operations in a period stretching from post-WW2 all the way to the modern day and even the near future at tactical and operation level. Detailed information and screen shots can be found on the What is 'Command: Modern Air / Naval Operations' page.

Where can I obtain a copy?

To purchase the simulator go to [this page](#).

Is Command a replacement for Larry Bond's Harpoon-series of naval war games?

Sometimes, old [Harpoon](#) players come over and expect Command to be Harpoon since the focus is similar. But Command is a scratch-built product that is not related with the Harpoon franchise. The simulator has a far more realistic balance between air and naval operations, and also allows for a whole new range of play styles from macro to micromanagement.

Is there a demo available?

There is no demo available at the moment, sorry! This is a publisher's (Matrix Games) decision, not developer (WarfareSims).

What are the system requirements?

The minimum requirements are as follows.

- OS: Windows XP SP3 / Vista / 7 / 8
- CPU: 1 GHz (Dual-core Pentium and above recommended)

- RAM: 1 GB (2GB+ recommended)
- Video/Graphics: DirectX 9.0c compatible video card with 16 MB RAM
- Sound: Compatible sound card
- Hard disk space: 10 GB Free
- DVD-ROM: Yes, for boxed version
- DirectX version: DirectX 9.0c (Suitable Direct-X version bundled with game)

The faster your computer is, the better. Generally, Command likes Intel processors better than AMD since Intel uses fewer but more powerful cores. The simulator is multi-threaded in that CPU-intensive operations are handed off to helper threads. But since the main game engine thread runs on a single core, processors with few-but-powerful cores have an advantage over many-but-less-powerful cores.

Command runs significantly faster on Windows 8.0 and 8.1. Speed improvements are typically 30-50%. If you're running Win7 or WinXP (God forbid!) we recommend upgrading to the very latest windows version.

We also recommend installing Command on a SSD (Solid State Disk) for faster disk access. This is especially important for database and map operations.

Does the simulator run on Mac?

Command does not run on any Mac operating systems, but you can use Parallels9 which is a virtual machine on Mac that runs Win7 pretty well. However it will not run the simulator as fast as a native Windows installation by dual boot. Parallels supports DX9 and DX10.

What is the game performance like?

We consider Command to be much faster & more scalable than any similar game available ATM. As an example, under very “busy” circumstances and with more than 1200 units on the map, Command is comfortably running at 1-1 minute time acceleration. This is on a mid-range Core i5 under Win8 x64.



Will the simulator scale correctly on triple monitors, 3072×768 resolution?

Yes, no problem. We would like to thank 'Rilee' for sending us a photo showing Command running on four monitors. This is 3 x ASUS 24" 1920×1080 monitors driven as a single display surface using AMD Eyefinity, plus a fourth Planar 22" 1920×1080 touchscreen monitor below. All very ordinary off-the-shelf stuff. It was set up for flight simulators, but works well for Command to.

Are there any known incompatibilities?

None have been recorded so far.

Is there a printed manual included with the boxed set?

Yes. And if you want to print the manual yourself you can download a more printer-friendly (and some would argue, also eyes-friendly) version of the manual [here](#).

The manual refers to the original version v1.00 of the game, and the updates released since have added a plethora of new features and improvements. To get up to speed on what's new, see the manual addendum section on the WarfareSims site [here](#).

Since functionality and features in the simulator are rapidly being expanded and improved we will make the updated Command 1.04 manual available on the web, as a web page. Turning the manual into a webpage makes it easier for the developer to keep the manual up-to-date, and improve player experience as they'll have easy access to the very latest documentation. The online manual should be ready soon.

Does the simulator have multiplayer?

Command does not currently support real-time multiplayer. Given the nature of modern air/naval warfare (long hours of nothing seemingly happening, then suddenly within a few hectic minutes the battle may be won and lost) this feature is lower on priority than a series of other improvements planned.

However, Baloogan, a Command fan (*arguably THE Command fan*) has developed a PBEM-style add-on called [Joint Command](#) which has become very popular with the user community. So if you're interested in battling other players go ahead and download it. Joint Command is continuously being developed and supported and has proved a great success.

Some say that Command is 'Work in progress'. What does that mean?

If the initial version of Command (v1.00) was the final product it would still be leaps and bounds beyond anything else in the genre, and pretty much on par for most games in general where it comes to quality (e.g. bugs and general weirdness).

But since both the community and developer are constantly working (free of charge) on improving the simulator by building scenarios, updating databases, adding new sim engine features, adjusting functionality, fixing bugs, and releasing new updates several times per month, it is clear that this sim is by no means finished.

Command is a labor of love and is also a simulator that the developers play themselves. It is the developers' intention is to stay actively engaged in evolving, improving, expanding and refining the simulator for many years to come. And it is hoped the simulator stays "work in progress" for a very long time.

How does the simulator compare to earlier games like Dangerous Waters and the like?

Dangerous waters was a tactical simulation so the actual action of driving a unit was certainly more detailed (go to sonar station, see water fall display on sonar, turn wheel etc). Command's scope is from that of a commander. So you manage forces and many of the tactical functions will be handled by the AI although you can take manual control and do things like plot courses, set speeds/depths and fire weapons if you want to. In terms of the overall modelling, Command is much more detailed with the exception of maybe sonar.

Getting Started

I'm downloading the simulator but my connection is unstable. What should I do?

There are a couple of downloader managers you can use. These protect what was downloaded if it is interrupted and resumes from where you left off. One of these is [Free Download Manager](#).

I have installed the game but it will not start. What is wrong?

Try reinstalling the prerequisites. You can do that by going to the following folder on your computer: C:\Matrix Games\Command Modern Air Naval Operations\PreRequisites

Run the dotNetFx40_Full_x86_x64.exe.

Then go to the following folder C:\Matrix Games\Command Modern Air Naval Operations\PreRequisites\directx_mar2009_redist

Run the DXSetup.exe.

Finally, reboot the computer and run Command.

How can I upgrade to the latest official version of the simulator?

There are two ways to Upgrade:

1. Use the updater from the game launcher applet:



2. If the updater does not work for any reason, or if you prefer to have the update files available offline, you can download them manually from the publisher's [Product Download Page](#)

Update files are cumulative, so you only need to download the most recent version.

In addition to the official updates, the Command development team regularly releases "unofficial" updates. These are typically listed on the main forum, in a thread titled "Build XXX is available". These releases offer the latest fixes, improvements, new functionality etc. and are fully supported by the development team. There is also an even more frequent series of internal beta releases but these are available only to the beta group. Very frequently the solution to an issue encountered in the official version is found in the unofficial public releases. For this reason we highly recommend to always use the latest publicly available "unofficial" update.

Where can I download more scenarios to play?

Command has 42 scenarios included, but many more have been developed by the user community. To download them or browse through them, go to the [Command Downloads Section](#). As of May 2014, there are 126 scenarios available for Command and the number is continuously increasing. Updates to the community scenario pack are announced on the WarfareSims main page and on the [Publisher's Forum](#).

Where can I get images and text descriptions for the simulator's integrated Database Viewer?

In the [Command Downloads Section](#) you will find image & description packs for the database viewer. Downloading these

means that when you look up for a platform's technical data you also get images & text description for that platform if available. Updates to these packs are announced on the WarfareSims main page and on the [Publisher's Forum](#). The images and descriptions were deliberately not bundled with the game in order to avoid IP/copyright issues.

Where can I find playing tips & misc. support?

The [publisher's forum](#) is probably the single best place for answering any questions you might have on playing the simulator. The developer and a community of myriads are ready to answer any sort of question and provide all the support you may need. You can also visit the [developer's forum](#). "No question is stupid, no call for help is lame" is our motto.

Baloogan, a Command fan (*arguably THE Command fan*) has put together a fantastic website with tons of useful Command material, including:

- [Video Series](#)
- [Chatroom](#)
- [Online Database Viewer](#)
- [Platform Type Index](#)
- [Nation Index](#)
- [Import Index](#)

Where can I find Video Tutorials?

Other than hands-on experimentation, the best way to learn the game is probably to watch others playing it. The dev team has put together a series of video tutorials covering the basics:

- [Gameplay Demo](#)
- [Basic Attack Tutorial](#)
- [Basic Plotting and Mission Editor Tutorial](#)

- [Event Editor Tutorial](#)
- [Import Files Tutorial](#)

Baloogan, a Command fan (*arguably THE Command fan*) has put together a fantastic series of video playthroughs, covering everything from basic gameplay all the way to massive global-scale scenarios. Treat yourself to his [video series](#).

On the same site you will find plenty of support material such as gameplay tips, an online database viewer, etc.

Is there a chatroom where I can meet other players, get help on gameplay, etc?

Baloogan runs a chatroom located [here](#) and should definitely be paid a visit.

Oops... I think I've found a bug. How can I report it?

You can submit reports on any problem/issue encountered on the [Tech Support forum](#). But first we ask that you read guidelines for submitting a bug report:

1. Please be kind. The devs are human beings too. The money you have paid for Command entitles you to a copy of the game, it's not a licence to be a dick on an Internet forum.
2. Always post a save file (either autosave or manual save). Command is a complex simulation of how stuff works in the real world. The real world has a million variables that affect why something is happening and so does Command. Don't try to describe every variable – you can't. But the save file can.
3. Always create a new thread for your issue. Don't add your report to an existing thread even if the OP there looks 100% identical to your own. Piling multiple issues on a

single thread makes it much more difficult for the devs to keep track of what is resolved and what is still pending. This means less time & energy for the devs to resolve your issue.

4. Please be patient. The devs are almost always either working feverishly on the next release or taking a much-needed break after a sprint (or may simply be busy with real life). Give them time to respond to your request.

Bah... The simulator crashed. And I haven't saved the scenario. What happens now?

Command automatically saves your scenario every 20 seconds. Restart Command and reload the autosave by pressing Resume from last autosave in the Main Window.

Is there anything else I should know?

Share your war stories and gameplay tips with other players on the [After Action Reports](#) and the [War Room](#) pages.

Get a taste of new & upcoming scenarios on the [Mods & Scenarios forum](#).

You will find the community a kind & friendly place to be, and members of the dev team are regularly present to solicit feedback from users, discuss future development and in general move the game forward.

Are there any small and simple scenarios you can recommend to beginners?

Stand Up, 2011 is often mentioned as a good starter scenario.

Others are:

- Wooden Leg, 1985 – Air
- The Shark, 1971 – Anti-Submarine Warfare (ASW)

- Operation Trident, 1971 – Surface

Can you recommend books for information on platforms, weapons and tactics?

As far as the best all around modern naval tactics book, look at CAPT Wayne Hughes' Fleet Tactics and Coastal Combat, 2nd ed (1999). Milan Vego's Soviet Naval Tactics and Naval Strategy and Operations in Narrow Seas are also very good. Admiral Sandy Woodward's One Hundred Days: The Memoirs of the Falkland Battle Group Commander, 2012 ed is an excellent case study of the operational level of modern naval warfare.

The classic techno thrillers by Clancy, Dale Brown, Larry Bond et al. might be good introduction. Red Storm Rising overall manages to explain modern naval and air tactics pretty well, especially the whole concept of EMCON.

Michael A. Palmer's book The War That Never Was: A Novel is in many ways far better than Red Storm Rising. You should probably also read Barret Tillman's The Sixth Battle. Salty as heck and the ultimate reading of a What-If between Russian and US CVs. Tillman is a former Chief Editor at Tailhook Magazine – this man knows naval aviation. Is not in print anymore but there are a lot of used books for a few dollars in Amazon.

I can also recommend Red Army by Ralph Peters. Describes a Warsaw Pact invasion of Western Germany, but from the Soviet perspective. Another great book from the Soviet POV, with discussions after each chapter, is Red Thrust by Steven Zaloga. It's completely tactical (at least the vignettes are) with some discussion of strategic concerns in the summaries after each chapter. Written in 1989, it's obviously a little dated, but it's

impressive how much he managed to get right. Highly recommended if you can find it!

A few other books are:

- The Naval Institute Guide to World Naval Weapon Systems, 5th Edition (2005) by Norman Friedman
- Conway's all the World Fighting Ships
- The Naval Institute Press series of "US Battleships (or Aircraft Carriers, or Destroyers, or Submarines, or Small Combatants), an Illustrated Design History" by Norman Friedman
- The Jane's series of books
- The Guide to the Soviet Navy by Norman Polmar
- Modern Submarine Warfare (Salamander Books, 1987)
- Modern Naval Combat (Salamander Books, 1987) by D.M.O. and C. Miller
- Beyond the General Belgrano and Sheffield: Lessons in Undersea and Surface Warfare from the Falkland Islands Conflict (1998) by Luke Swartz

A few websites are:

- [Principles of Naval Weapon Systems](#)
- [Sierra Hotel – Flying Air Force Fighters in the Decade After Vietnam](#)
- And lastly, but hard to find, is the [Harpoon II: The Official Strategy guide](#) (1993) by Ed Dille and T. Basham.

Configuration

How can I make Command run faster?

Go to Game -> Game Options. Turn off the following two:

- High-fidelity mode
- No-pulse time mode

- Turning off these will make the game run much smoother as the simulator makes far fewer calculations per second, running at 1 second resolution rather than 1/10 second resolution.
- Next, turn off as many range rings as you can. This can be a bummer but you can manage if you leave most important range rings on (depending on your force) and show them for Selected Unit Only. The range rings will then only be shown for the currently highlighted unit.

How can I change altitude from metric to imperial/USM (feet)?

To view altitude and depth in feet rather than meters, to go Game -> Game Options, and check 'Show Altitude in Feet'.

User Interface

What kind of maps does the simulator use?

Command's built-in map layers include a global "Blue Marble NG" tileset and a custom relief layer derived from our terrain elevation data. Blue Marble NG has a resolution of ca 500m and is the tileset used as standard.

The elevation data come from the Shuttle Radar Topography Mission (SRTM) and has a base resolution of 3 arc-seconds (~900m/cell at the equator), thus allowing for unprecedented terrain detail benefiting air, naval and land operations alike. The elevation data is used by the navigator, weapon logics, sensors logics (line of sight, LOS), etc.

Due to the many errors in the 3rd party maps and elevation data we've made quite few manual corrections to the digital terrain in

Command. Primarily in areas where scenarios have been built. We are well aware of the fact that many errors remain (the planet earth is pretty big at 500/900m resolution!) and if there are any map errors that affects a scenario you're playing or building, let us know and we'll see if we can fix it in the next update.

How do I edit a plotted course?

- To create a new plotted course, press the F3 hotkey and click on the tactical map to place the waypoints. When you're done press Esc or F3 key. Alternatively, double-click when placing the last waypoint to exit Path Plotting mode.
- To move a waypoint, click and drag the waypoint with the mouse pointer.
- To create a new waypoint, hold down the Ctrl key, click and drag an existing waypoint with the mouse pointer. The mouse pointer must move at least four pixels for a new waypoint to be created.
- To delete a waypoint, click on it and press the Delete key.
- To delete a whole plot select the unit and press F3 twice.
- If you want to re-plot a course from a waypoint in the middle of an existing plot (say, starting at waypoint 3 out of 6), select the waypoint (#3) and press F3. All waypoints beyond the selected waypoint (#3) are deleted and you can plot a new course from this point onwards.

How can I specify throttle and altitude settings for individual waypoints?

Select the waypoint and press the F2 hotkey. Alternatively, right-click on the waypoint and select Throttle – Altitude/Depth.

How can I specify EMCON settings for individual waypoints?

Select the waypoint and press the F9 hotkey. Alternatively, right-click on the waypoint and select Sensors.

The rightmost Unit Status menu is truncated. How can I resolve that?

Set your desktop font size to 100% instead of 125% or 150%.

Why are most windows lacking OK and Cancel buttons?

- If a window does not have the standard OK/Cancel buttons it means the orders/settings you are generating through it are applied immediately. Usually there is a sound technical reason for it. Some of the actions, when made in windows, cannot be cancelled, and thus are always OK.
- All windows can be closed with the Escape (Esc) hot key. Windows that were opened with a function key (F1, F2...F11) can be closed using the same key.

Is there a way to make the tactical map stick to a unit?

To keep a unit centred on the tactical map, select the unit to track and press the T hotkey. Alternatively, go to Map Settings -> Track Selected Unit. To stop tracking the unit, press the T hotkey or the menu item again.

How can I make mouse scroll zoom in at the cursor location, rather than at centre of screen?

Go to Game -> Game Options -> General, and select 'Map zooms on mouse cursor'.

I get too many / not enough messages about what's happening. Can I change this?

You can configure which message types will appear by going to Game -> Game Options -> Messages. You can also configure

which message types will cause a pop-up to appear, freezing the clock. This is very useful for new weapon contacts.

Can I have the time compression revert to 1:1 under certain conditions?

Go to Game Options -> Message Log and then select events you like to raise pop-up. Once you get the popup window, you can hit the keypad enter key which drops the time to 1:1 even while it is still on pause and the popup is still open. Then press Close + Resume. Alternatively, press Close which pauses the game.

Is there a "ruler and compass" tool so you can know distances and headings?

To activate the Range / Bearing Tool, press Ctrl + D or go to View -> Range / Bearing Tool. It is also available through the context (right-click) menu. The tool allows you to draw a temporary line between two points and displays the distance and bearing between those two points. To de-activate the Range / Bearing Tool, either double-click on the map, press Ctrl + D, or go to -> Range / Bearing Tool again.

Is there a way to know cloud height/base and does the weather engine consider it?

The mouse pointer 'black tag' gives information about the weather, including sea state, temperature, cloud cover and rain. The weather affects sensor effectiveness, and is configurable in the scenario editor.

Why is the Radar Illuminator text in red in the Emissions list?

Radar Illuminators are really dangerous radars. They are used with Semi Active Radar Homing (SARH) guided missiles. Most medium and long-range Air-to-Air Missiles (AAMs) and Surface-to-Air

Missiles (SAM) use SARH guidance, where the missiles home in on radar energy reflected from the illuminated target. Once an illuminator goes active there is most likely a missile in the air

Can I manually designate contacts as Hostile? Neutral? Friendly?

Yes. Select the contact(s) and press the H key to mark as Hostile, N key to mark as Neutral and F key to mark as Friendly. Alternatively, go to 'Contacts' and select the desired option.

I have dual monitors. How can I move the message log to a separate monitor?

To have the message log in a separate window, go to Game -> Game Options, and tick 'Message Log in Separate Window'. You can then move the message window to the second monitor.

What does this mean: Weapon (40mm/70 Single Breda Burst [4 rnds]) airbursting off K 21 by 103m?

That's a burst (4 shells fired at once in a salvo) from a 40mm/70 Single Breda gun mount, exploding in flight (not on impact) 103m off a unit named K21, and it's happening at 22:56:33.

How can I make my own custom map overlays?

There is a great introduction to custom map overlays [here](#) and [here](#).

Gameplay tricks and tips

How do I select which side to play in a scenario?

When you load a scenario you will first see a window with the briefing for the default side. On top of that window you will see a "Side:" label and a drop-down list with all the playable side for that

scenario. Some scenarios can only be played from one side, while others can be played from two or more sides.

Where can I find the hotkeys list?

Go to Help -> Hotkeys.

Are there any instructions to go along with the tutorial scenarios?

Just start the scenario to get all the necessary pop-up instructions. You can also open the scenario side briefings by going to Game -> Side Briefing.

How do I select multiple units on the map?

You can click and drag for multiple targets, or use Shift + mouse click.

How can I set 'weapons tight' (Hold Fire)?

To set weapons tight for the selected unit(s), press the 'A' hotkey or go to Unit Status -> Attack Options -> Toggle Hold Fire for selected units (no AI attacks). You can also set weapons tight for all units on your side by pressing 'Ctrl + A' or go to Unit Status -> Attack Options -> Toggle Hold Fire for all units on current side (no AI attacks). These options are also available through the mouse context (right-click) menu.

How do I control the amount of ordnance to shoot at a target?

To manually allocate weapons, select the firing unit and press 'Shift + F1'. Alternatively, go to Unit Status -> Attack Options -> Engage Target(s) – Manual. This option is also available through the mouse context (right-click) menu. The cursor has now become a cross. Select the target(s) you want to shoot at, and that brings

up the Weapon Allocation window where you can assign weapons to targets.

How can I disband a group?

To disband a group, select the group in Group View and press the Delete button.

Alternatively, switch to Unit View, drag-select the units you want to disband, and press the 'D' (Detach) hotkey. To disband the whole group, select all units and press the 'D' hotkey.

How can I select specific sensors on specific unit in a group?

Switch to Unit View and select the individual unit. Then press the F9 hotkey to bring up the Sensor hotkey.

Plotting a course for a unit that is 'Engaged Offensive' doesn't work. Can I override this behaviour?

To take control over a unit, press the 'I' hotkey or go to Unit Orders -> Attack Options and uncheck Ignore Plotted Course When Attacking – Selected Unit. Alternatively, right-click on the unit, select Attack Options, and uncheck Ignore Plotted Course When Attacking – Selected Unit. The unit will then revert to its plotted course.

What is the difference between postures Unfriendly and Hostile?

- Unfriendly: maneuver to intercept and localize/ID but do not engage unless the "Engage non-hostiles" doctrine option is activated, in which case all bets are off.
- Hostile: maneuver to intercept and engage if part of mission. Aircraft and missile contacts are always automatically engaged, mission type be damned.

How do I deploy troops from ships and aircraft?

They cannot be delivered as per Command v1.04, but you can use the Event Editor to model the delivery of SOF teams and the like.

How can I make units on support or patrol missions only use active sensors inside the station area?

There's a check box in the mission editor for this.

How does one deploy Mk55 Naval mines from B52 bombers?

- The easiest (and certainly least tedious!) way to mass-deploy mines is to assign the laying platform(s) to a mine-laying mission.
- We did a video on this a while ago, have a look [here](#).
- The more tediousbut more "hands-on" way is to perform "BOL-launch" on every point where you want to lay a mine. This can work for a dozen or so but not really recommended if you want to lay hundreds or thousands.
- You can also lay "prefabricated" minefields, for scenarios where the laying action itself is not important. This is described in detail [here](#).

How can I order Check Fire?

- To disengage all targets, select the attacking unit and press 'Ctrl + E'. Alternatively go to Unit Orders -> Attack Options -> Disengage (Drop All Targets). This option is also available through the mouse context (right-click) menu.
- If you want to drop a certain target before it has been destroyed (and has disappeared from the tactical map), select the attacking unit and press 'E'. Alternatively go to Unit Orders -> Attack Options -> Drop Target(s). This option is also available through the mouse context (right-

click) menu. Lastly select the target(s) to drop. To select multiple targets, hold down the Shift key when clicking.

What are Illumination Vectors (broken red line) and Targeting Vectors (broken green line)?

- A targeting vector is telling you a unit has orders to engage a target, and is firing or preparing to fire. An illumination vector means the target is illuminated by some kind of sensor, i.e. a laser is used to illuminate a target for a laser-guided bomb (LGB).
- To view targeting and illumination vectors, go to Map Settings -> Targeting Vectors – Show All or Selected Unit.

Why do enemy radars still have their “range ring” when they are no longer active?

The enemy radar range rings are an estimation. Your crews cannot know for sure if the radar has been knocked out. That it's not radiating right now is an indication, but an unreliable one. Particularly against a competent IADS operator like the Soviets, Egyptians or Serbs.

How can I make my units maneuver, unmask weapons and engage instead of automatically run and evade?

If you don't want your units to automatically go defensive you can disable this behaviour in the Doctrine / ROE window. Set Automatic Evasion to No.

Is there a way to simulate Search and Rescue (SAR)?

Not per Command v1.04. You can kind of achieve this by using the teleport action coupled with an area trigger in the event editor to model it but there is no true SAR in the simulator yet. We need to complete the amphibious model to really put this into action.

When I drop a contact, it comes back a second later. Why?

If the contact is a ground facility set to 'auto detect' it will be re-detected immediately.

Also, if your side is allied with another side that sees the contact, the contact will automatically be transferred to your side.

Can I re-target datalinked weapons like Tactical Tomahawk?

Yes. Select the weapon, press F1, and select the new target.

What is the best way to employ the ITALD and TALD loadouts?

The TALD and ITALD air-launched decoys are just extra targets for SAM and radar sites, so just fire them along with other ASMs or ahead of your strike aircraft. The hotkey to fire air-launched decoys is Ctrl + F1 (the same key is also used for BOL-attacks). The AI cannot use decoys as per Command v1.04.

How do I fire naval Surface-to-Air Missiles (SAMs) against surface ships?

Many ship-based SAMs with Semi-Active Radar Homing (SARH) have an anti-surface mode. To fire the weapon successfully you need to get closer till your ship can literally see the other ship to point your illuminators at it. And then you have to go into the doctrine window (Ctrl + F9) and turn the Use SAMs in anti-surface mode to Yes. That option restricts your ships from using SAM against other surface targets.

Platforms and Weapons

Why do the databases have multiple entries for the same platform?

There are multiple database entries for the same platform to represent all operators, main versions, subversions and weapon configurations over time.

Why no TASM (Tomahawk Anti-Ship Missile) after 1991?

The nuclear (TLAM-N) and anti-ship (TASM) variants of the Tomahawk missile were withdrawn in the early 1990s after the Cold War had ended. TASM was withdrawn because there was no longer any chance of blue-water engagements against a navy with large, high-value targets like the Soviets, and many of the missiles were converted to land attack. The TLAM-N was withdrawn as per a 1991 agreement with Russia to not deploy nuclear weapons at sea (other than strategic ballistic missiles).

Why are later S-3 Viking variants not carrying ASW weapons?

The Viking's ASW role was removed in 1999. US aircraft carriers then deployed with six S-3 Vikings; some for the tanker role, and two aircraft dedicated to ASuW armed with iron bombs, Harpoons and Mavericks. The ASW mission was taken over by Seahawks and Orions. The Viking was retired from frontline service in 2009.

Why do many guns have such a low PoK against aerial targets?

Many air targets like anti-ship cruise missiles are extremely difficult to shoot down. And even if destroyed in mid-air, the missile may still cause serious damage if the warhead detonates at ranges closer than 500m from the target, or if the ship is hit by debris

from a disabled missile. In the Falklands War, only one of six Exocet missiles fired at British ships was shot down, and this kill is not even 100% certain. PoK (Probability of Kill) for guns is the chance of hitting a target with a burst of fire – this can either be a single round (for larger guns) or up to several hundred (for Mk15, AK-630 etc).

Why do Aegis ships (and others) have empty Mk41 VLS cells in the database?

There are not enough weapons around to fill all VLS cells, so ships deploy with empty cells. Typical loadout for a Tico, for instance, is 96x SM-2s, 48 per VLS. The 'heavy' AAW loadout for Burkes is 72x SM-2. The ships also carry a handful Tomahawks and VLAs.

Why do not newer USN Arleigh Burke Flight IIA ships carry any Harpoon missiles?

The USN is not fitting Harpoon missiles to new ships. They carry helicopters instead. The anti-surface task is now left to carrier air and to submarines (using torpedoes only). If you look in the database there are no Sub-Harpoon missiles on modern submarines either. These were withdrawn in the late 1990s.

Why do newer USN Arleigh Burke Flight IIA ships not carry any SM-2MR missiles by default?

- ESSM replaces both the SM-2 and CWIS on newer Burkes, although a single CWIS has been re-installed on some ships. You can reconfigure the Burkes from land-attack role (which is the default loadout used in the database) to AAW manually in the scenario editor. The standard AAW loadout on the Burkes comprise 72 SM-2MRs (96 SM-2MRs on the Ticos), a handful Tomahawks (probably 8-10) and some VLAs.

- 24x SAMs used to be (and still is?) the 'standard destroyer loadout' of anti-air missiles. Whether its SM-2 or ESSM. This is also the same number of SAMs that the Spruance carried, however the Burke can fire them all at once. So 24x anti-air missiles is a pretty potent loadout in most environments. Aircraft carriers used to have 24x ready-fire Sea Sparrows (see a pattern?), however this has now been changed to 16x + 42x RAM.
- So the default missile loadouts in the database are 'typical loadouts' and, like it or not, are realistic. The good thing about Command, though, is that you are free to configure the VLS the way you want in the scenario editor.

How do I kill the fast MiG-25 and MiG-31 interceptors?

When you decide to go after a group of MiG-25 or MiG-31 interceptors, it is important that your fighters fly as high and as fast as possible to maximize the range of your own missiles, and reduce the Dynamic Launch Zone (DLZ) of the enemy's missiles.

Why is the AN/AWG-9 radar on the F-14 Tomcat limited to a 40 deg search arc?

- Although the AN/AWG-9 has a +/- 65 degrees frontal scan sector, the aircraft doesn't search arcs larger than 40 deg / 2 bars or 20 deg / 4 bars at a time. This is so that tracks can be updated every 2 seconds. A full 130 deg / 8 bar sweep may take as much as 30 seconds and has limited tactical use. As such, it has a 40 degree frontal arc in Command.
- Looking beyond Command v1.04, the plan is to allow the AI and player to turn the search arc (scan cone) sideways, so the aircraft can scan 65-25 deg off-angle. The aircraft can then launch medium-range missiles, turn 60-ish degrees to reduce the closure rate, and still guide missiles to the

target. Getting this to work properly for all aircraft/weapon and tactical combinations is a bit of a pain so will take time to implement and test. However the database has already been updated supports this so the groundwork has already been done. The developer won't give any promises on ETA, though.

My F-16C Falcon with the Sniper pod can ID targets at ranges up to 70nm. How is that possible?

Please check out [this link](#). The Sniper pod can magnify up to 30 times. Similar pods like ATFLIR have really impressive ranges too. However, scanning for targets using these systems is like looking through a straw and is difficult. They do not have an auto-scan mode either. As such, the pods are primarily slaved to the radar when used in the air-to-air role, and are used to ID targets already detected.

ID	Long Title	User	Name	Comments	Primary Type	Number	Thrust of Eng. (kg)	SFC (kg/min)	% Usage	Thrust (kg)	Thrust (kg)	SFC (kg/min)	% Usage	Thrust (kg)	Thrust (kg)	SFC (kg/min)	% Usage
63F-15A	F-15A	2x F100-PW-100	-	-	Turbofan	2	6622	0.735	76	5033	10260	2.50	88	9028			
1591F-15C	F-15C, 3x Tanks	2x F100-PW-229	-	-	Turbofan	2	8081	0.726	62	5010	13211	2.06	69	9113			
2089F-15C	F-15C/D, 3x Tanks	2x F100-PW-220E	-	-	Turbofan	2	6622	0.735	76	5033	10260	2.50	88	9028			
1590F-15C	F-15C/D, 3x Tanks	2x F100-PW-220E	-	-	Turbofan	2	6622	0.735	76	5033	10260	2.50	88	9028			
741F-15E	F-15E/15, 3x Tanks	2x F100-PW-229	-	-	Turbofan	2	8081	0.726	62	5010	13211	2.06	69	9113			
1135F-15D	F-15D, 3x Tanks +	2x F100-PW-220E	-	-	Turbofan	2	6622	0.735	76	5033	10260	2.50	88	9028			
1912F-155F-155A/55, 2x Tanks	F110-GE-129	-	-	-	Turbofan	2	8081	0.726	62	5010	13211	2.06	69	9113			
1888F-16A	F-16A Bk 150C1	1x F100-PW-220	-	-	Turbofan	1	6622	0.735	91	6026	10791	2.14	84	9064			
1123F-16A	F-16A	1x F100-PW-200	-	-	Turbofan	1	6622	0.735	91	6026	10791	2.14	84	9028			
458F-16C	F-16C Bk 30/25/31	1x F100-PW-220	-	-	Turbofan	1	6622	0.735	91	6026	10791	2.14	84	9064			
347F-16C	F-16C Bk 30/40	1x F110-GE-100	-	-	Turbofan	1	8321	0.745	73	6074	12993	2.08	70	9095			
744F-16C	F-16C Bk 50	1x F110-GE-129	-	-	Turbofan	1	8626	0.745	70	6038	13154	2.09	69	9076			
145F-16C	F-16C Bk 52	1x F100-PW-229	-	-	Turbofan	1	8081	0.726	75	6060	13211	2.06	69	9115			
1887F-16C	F-16C Bk 52+52	1x F110-GE-129	-	Conformal Tanks	Turbofan	1	8626	0.745	70	6038	13154	2.09	69	9076			
2123F-16C	F-16C Bk 52+	1x F100-PW-229	-	Conformal Tanks	Turbofan	1	8081	0.726	75	6060	13211	2.06	69	9113			
1470F-16C	F-16C Bk 60	1x F110-GE-132	-	-	Turbofan	1	10550	0.694	58	6090	14512	2.09	62	8998			
1462F-16C	F-16C	1x F100-PW-220E	-	-	Turbofan	1	6622	0.735	91	6026	10791	2.14	84	9064			
1463F-16C	F-16C	1x F100-PW-232	-	-	Turbofan	1	8081	0.726	75	6060	13211	1.94	69	9115			
1200F17	MiF17 Mod 1, F17P	Torpedo Engine	-	-	Torpedo Engine	0	0	0	0	0	0	0	0	0			
267F17	MiF17 Mod 2	Torpedo Engine	-	-	Torpedo Engine	0	0	0	0	0	0	0	0	0			
734F-22A	F-22A	2x F119-PW-100	-	-	Turbofan	2	11350	0.76	100	11350	16798	1.91	68	11422			

F-15E Eagle										F-22A Raptor									
	Lower Alt (ft)	Upper Alt (m)	Lower Alt (m)	Upper Alt (m)	Speed (kt)	Speed (Mach)	Fuel Cons (kg/min)				Lower Alt (ft)	Upper Alt (m)	Lower Alt (m)	Upper Alt (m)	Speed (kt)	Speed (Mach)	Fuel Cons (kg/min)		
1Creep/Lotter	0	12000	0.0	3657.6	350	0.52	54.17	1Creep/Lotter	0	12000	0.0	3657.6	350	0.52	33.40				
1Cruise	0	12000	0.0	3657.6	480	0.72	67.72	1Cruise	0	12000	0.0	3657.6	480	0.72	41.76				
1Full/Military	0	12000	0.0	3657.6	580	0.87	114.71	1Full/Military	0	12000	0.0	3657.6	650	0.98	267.47				
1Flare/Afterburner	0	12000	0.0	3657.6	650	0.98	382.43	2Creep/Lotter	12001	24000	3657.9	7315.2	350	0.55	31.29				
2Creep/Lotter	12001	24000	3657.9	7315.2	350	0.55	47.96	2Cruise	12001	24000	3657.9	7315.2	480	0.75	39.12				
2Cruise	12001	24000	3657.9	7315.2	480	0.75	59.98	2Full/Military	12001	24000	3657.9	7315.2	750	1.18	250.34				
2Full/Military	12001	24000	3657.9	7315.2	570	0.89	101.54	3Creep/Lotter	24001	36000	7315.5	10972.8	350	0.57	26.40				
2Flare/Afterburner	12001	24000	3657.9	7315.2	700	1.10	351.26	3Cruise	24001	36000	7315.5	10972.8	480	0.79	33.00				
3Creep/Lotter	24001	36000	7315.5	10972.8	350	0.57	36.57	3Full/Military	24001	36000	7315.5	10972.8	850	1.40	211.32				
3Cruise	24001	36000	7315.5	10972.8	480	0.79	45.72	4Creep/Lotter	36001	40000	10973.1	12192.0	350	0.60	25.22				
3Full/Military	24001	36000	7315.5	10972.8	550	0.90	77.43	4Cruise	36001	40000	10973.1	12192.0	480	0.83	31.53				
3Flare/Afterburner	24001	36000	7315.5	10972.8	800	1.32	293.15	4Full/Military	36001	40000	10973.1	12192.0	1000	1.74	201.85				
4Creep/Lotter	36001	40000	10973.1	12192.0	350	0.60	27.15	1Creep/Lotter	0	0	0.0	0.0	0.0	0.0	0.00				
4Cruise	36001	40000	10973.1	12192.0	480	0.83	33.94												
4Full/Military	36001	40000	10973.1	12192.0	520	0.90	57.47												
4Flare/Afterburner	36001	40000	10973.1	12192.0	950	1.63	297.85												

Why doesn't the F-22A Raptor have a separate Afterburner throttle setting?

- Please see the screenshot from the database editor. It gives some clues about what's going on under the hood.

- The reason the afterburner (AB) setting is missing is because the F-22 doesn't use AB for cruise, only acceleration/climb/dogfighting. We would like to expand our propulsion model post-Command v1.04, but have a bunch of other things we want to do first.
- When that's said, the F-22 will fly at 1000kt using Military power so fuel consumption is quite good. No afterburner-style 'dry in 15 minutes' burn rates.

Why does the F-22A Raptor have a 480kt cruise speed like most 4th generation fighters?

- Physical laws apply to the F-22, even at \$200 million a copy. So although we're lacking a lot of stats on engines and airframe capabilities, we can still make some (painfully?) realistic assumptions about the aircraft's capabilities.
- Having a fixed and inefficient 'stealth' jet intake and duct has a nasty effect on the F-22's thrust/SFC. Static military thrust at sea level (SL) for the F119-PW-100 is supposedly 25000lb and Specific Fuel Consumption (SFC) is probably 0.76. Which is slightly higher than for the latest F100 engines on the F-15C/E Eagle.
- The static thrust figure is for an engine installed on a test rig. When installed on the aircraft the thrust drops due to inefficient inlets. Adjusting for altitude and Mach speed (yes, we actually do that in Command!) the thrust for each F119-PW-100 engine on a F-22 flying at military throttle (650kt) at sea level, is 16764lb. SFC is 1.04. The SFC is calculated as follows: $\text{Thrust} / (1 + \text{Constant} * \text{Mach}) * \text{Density}$.
- Public sources suggest that the F-22 is only capable of doing relatively short 'sprints' at full military throttle (supercruise) in real life. The military thrust in the simulator

is 10083lb and SFC is 1.32 at 36k ft and Mach 1.75. Fuel consumption at full military throttle for the F-22 is quite high. $100083\text{lb} * 1.32 \text{ SFC} * 2 \text{ engines} = 26500\text{lb}$ of fuel burned per hour. Which is 6000lb more fuel than the F-22 carries. So the "800nm combat radius at Mach 1.6" capability is a myth. A typical combat sortie is flown mostly at subsonic speeds.

- A cruise speed of around 480-500kt (Mach 0.85) is the most economical as the engines are working efficiently and drag is relatively low. Transonic drag is very (very!) high, but drops sharply beyond Mach 1. However beyond Mach 1 drag is still higher than at Mach 0.85 so fuel consumption goes up and range suffers. This is true for all aircraft, F-22 included. So everything points towards 480kt as a realistic cruise speed. And you can always hit 'Military Throttle' and go to 1000kt supercruise (ca Mach 1.75) with relatively economical fuel consumption.

The F-35A Lightning II supposedly has a Mach 0.9 cruise speed but in Command it is 'only' 480kts. Why?

A Mach 0.9 cruise speed at 36k feet is ca 515 knots. In other words a 35kt difference between the stated speed and the one used in the simulator. But will the F-35 really cruise faster than 4th generation fighters? While normally "Because I can" is a 100% valid argument, in this case it is not so certain. Higher speeds and supercruise is great to use in tactical scenarios, but just while cruising it is more common to see various participants in a mission choose the same ingress speed, so that you can talk in timings easily as well. Luckily though, in Command you can manually set the desired speed. So feel free to increase speed to 515kt or 535kt. Fuel consumption goes up, of course.

Radar types: FCR, target indicator, weapon director, radar illuminator? What does it all mean?

- FCR – Fire control Radar is a radar which is designed specifically to provide information (mainly target azimuth, elevation, range and velocity) to a fire-control system in order to calculate a firing solution (i.e. information on how to direct weapons such that they hit the target(s)).
- Target Indicator – A radar of lesser range capabilities but of greater inherent accuracy than that of surveillance radar, whose normal function is to acquire aerial targets either by independent search or on direction of the surveillance radar, and to transfer these targets to tracking radars.
- Weapon director – An anti-aircraft artillery radar that directs gunfire.
- Radar illuminator – An anti-aircraft radar that illuminates targets for Semi-Active Radar Homing (SARH) weapons.
- Let's look at the radars for a SA-5b (S-200V) Surface-to-Air Missile (SAM) system: Square Pair (5N62) – FCR-radar. This will be used to guide missiles to target. No need to manually active them. Odd Pair A HF (PRV-13) – Height-Finder. Older 2D radars are unable to obtain height of the target. Also they had blind spot for low flying aircraft/helicopter. A second radar was used to overcome these weaknesses. Tall King – 2D Long Range. Main radar for detection.

Why does the Mk214 Sea Gnat Chaff have "surface ships" as valid target?

For decoys, the "valid target" value represents the type of contact they will represent to enemy sensors.

Why do torpedoes have such a short range?

Simulating technical limitations is one thing, taking into account practical 'field limitations' is another. In order to have a realistic simulator we need to take into account both. For instance, Soviet doctrine stated that torpedoes should not be fired at targets beyond 13k yards. The chance of actually hitting the target drops dramatically beyond that range while at the same time you notify the target about your presence and possibly even give away your (approximate) position. This also goes for the super-heavy 650mm torpedoes, which would use their speed and range to catch up with a fleeing US CVN. As such, the practical firing range in Command is limited to ca 8nm, even for high-end torpedoes. It makes sure that both the player and the AI adhere to the same real life technical/tactical/doctrine/field limitations. The ADCAP still has enough fuel to make it out to 20nm at 55kt, or 27nm at 40kt. We can easily lift the practical firing range limitations and let the AI shoot at any target within kinematic range. In fact that's how the simulator handled it for a while. So the functionality is already there – we do on-the-fly Dynamic Launch Zone (DLZ) calculations for SAM/AAMs to allow weapons to be fired 'early' to hit a fast closing target like an ASBM. But for relatively slow tops and fast ships this leads to a lot of stupid shots as the weapons are usually detected early and the defender has lots of time to move out of the way.

It is still possible to BOL-launch torpedoes if you want to fire the weapon at long ranges. You can then manually steer them to their target at max range – granted the weapons have wire guidance and you don't fire more torpedoes than you have wire guidance channels.

We actually tried a more advanced method for determining max firing range based on torpedo speed and target speed & heading. This resulted in a lot of stupid shots while the AI was building a

firing resolution. Like, if you have contact at 20nm but no speed info, do you shoot? No? But if the same contact is at 4nm? Etc, etc.

The end result was that the targets fled as soon as the submarine fired a torpedo, and helicopters scrambled to locate and sink the ship. The submarine-fired torpedoes were outrun one hundred percent of the time. A diesel sub in this situation is in pretty deep poo-poo since it doesn't have the speed to catch up with the fleeing SAG or fast convoy, and also lacks the speed and diving depth to get the hell outa here before the helos start dipping their sonars. This situation got even worse when the opening long-range shot was against one of the outer screen ASW escorts. The SAG/convoy would automatically turn around and run, and there was no way an AI-controlled submarine would ever get into position for a shot on the HVUs. As such, limiting the firing range from 'max theoretical' to 'max practical' the AI was much more successful. It would wait for the targets to get real close before shooting off torpedoes and sinking ships in quick succession. on what we do next) for the above reasons.

As for fighting other submarines, sub-vs-sub is like a knife fight in a phone booth. Torpedo launch usually takes place at around 1nm. So the firing range limit is pretty much a non-issue there.

The radar 'Rock Cake HF [PRV-10M] does not seem to be working. Why?

This is a height-finding radar (HF), which provides height information on contacts detected by search radars.

Air Operations

Why do most combat aircraft have a 40 000 feet (12192 m) ceiling?

Combat aircraft rarely go higher than 40k ft. In special cases 45k ft but not higher than that.

What is the yellow "L0" or "L1" under aircraft symbols?

This is the landing priority number. Aircraft at the marshal point are automatically prioritized based on remaining endurance. Aircraft L0 gets to land first.

How can I get aircraft to egress from target on a plotted path instead of calling Winchester?

- If the aircraft are assigned to a mission, make sure the RTB When Winchester option in the Doctrine / ROE / EMCON window is set to off. Then check the 'Use Auto Planner' in the Mission Editor. The mission logics will then automatically create randomly placed ingress and egress routes from the target based on the mission's default profile.
- Alternatively, you can unassign the aircraft from the mission, plot a course manually, make sure that either the the RTB When Winchester option in the Doctrine / ROE / EMCON window is set to off for the air group, and manually allocate weapons through the Manual Allocation (Shift + F1) window.

Is the grounding of aircraft simulated because of bad weather or night-time conditions?

Not in Command 1.04. It is our plan to add this, however. And when it's there you'll probably wish it wasn't hehe.

How can I get ground units to illuminate targets for air-dropped Laser-Guided Bombs (LGBs)?

Ground units illuminate targets automatically if the aircraft do not have an onboard laser illuminator, once the aircraft releases the bomb.

Is it possible to jettison drop tanks and ordnance on aircraft?

Not at the moment. For this to work in a simulator like Command there are a few concerns that would need to be worked out, particularly on the AI side as well as calculating pre/post jettison endurance, etc. But it will likely be added in the future since we like the idea of 'soft kills' on strike aircraft because your anti-air missiles, while they didn't hit, did cause the enemy to jettison stores and abort their mission.

Is it possible to land one's aircraft at an airbase or airport belonging to an allied side?

Yes, allied air bases work the same way as any own-side air bases.

Is it possible to drop ordnance at a given location irrespective of any enemy units being there?

Dropping bombs on a coordinate is not possible in Command v1.04 but is planned for the Advanced Strike Mission Editor. Currently you can only drop bombs on contacts.

What is the deal with the "Maintenance (Unavailable)" loadout?

- The aircraft fitted with the Maintenance (Unavailable) loadout are a representation of the typical situation in an airbase. You have a number of aircraft that you cannot use, but they are there nevertheless, and they take up space

and resources. The fact that you cannot use them doesn't make them invisible. Not having them at all would make your entire airbase's resources available to the player e.g. 10 out of 10 usable aircraft. Which of the two is more realistic?

- As such, you can have 60 aircraft on an air base but only 4 available for operations. Unfortunately for the player that happens in real life and is (painfully) realistic. Since it happens in real life, it also happens in Command.
- Plus they make great targets. Don't you just love scrubbing a airbase clean of aircraft with cluster bombs.

What is the difference between 'Reserve' and 'Unavailable' loadouts?

If the scenario author wants aircraft to be unavailable at the start of a scenario but become ready for operations later on he would give them the 'Reserve' loadout rather than the 'Unavailable' loadout. 'Unavailable' means unavailable for the duration of the scenario. Alternatively, the scenario author can arm the aircraft with the intended combat loadout and manually give them a delayed 'ready time'.

Is there a way to activate aircraft set to Maintenance (Unavailable)?

No, aircraft set to Maintenance (Unavailable) can not be used in the scenario. If you are designing a scenario and want the aircraft to become ready later on, you can load them with a weapon loadout or Reserve loadout, and specify a Ready Time.

Why does it take 6 hours to prepare my strike aircraft for a sortie?

The short answer is we look at everything involved in launching a mission including arming, planning etc. and not just the physical

act of loading weapons on to the aircraft. For a quick introduction to this complex subject, please read the following article on [Custom Ready Times](#).

Do UAVs behave differently from manned aircraft?

Yes, UAVs do not apply their agility bonus on the weapon endgame calculations. As a result they are terribly vulnerable to anti-air fire. Remote human operators must rely on their sensor information instead of their own eyes. As a consequence they might have having less situation awareness (looking through an EO/IR sensor is always compared to “looking through a straw”) and might be unable to respond or evade ground fire as quickly.

The loadout selection window has “time-of-day” and “weather” columns. Are these in use?

Weather and day/night limitations are not yet supported in Command v1.04. The database development is slightly ahead of the simulator engine development, and we have populated various database fields to support future features.

Can I reload my aircraft without air-to-air weapons in air-to-ground loadouts?

Yes, you can ready aircraft using the ‘Exclude Optional Weapons’ option. This will load the aircraft without self-defence air-to-air missiles, or with a reduced number of self-defence missiles.

What is the best way to disable an airbase?

The simple answer is that it varies a lot. Depending on the airfield configuration, the runway or the access points may well be the best targets, but if its an open airfield with only tarmac parking instead of hangars/revetments, then a single strike has a chance of getting rid of a significant portion of the aircraft based there.

It is also dependant on what you have available for weapons – some of the high penetration cruise missiles or bombs are ideal for getting rid of ammo bunkers, whereas regular iron bombs or JDAMs are more suited for runway and parking area removal.

My general approach is to assess airfields based on 3 criteria;

1. Number of access points vs number of runways/taxiways
2. Type of aircraft parking – open vs protected (hangar) vs hardened (HAS or underground)
3. Concentration of ammo storage

The first often lets you filter out those airfields that are fairly easy to shut down – if for example there is 1 runway with 3 access points, the access points are the obvious and easier targets, and will completely neutralize the airfield. Larger airfields become progressively harder to do this to, as they can have 4-8 access points per runway, as well as several runways/runway-capable taxiways. In these cases, it may be more sensible to strike the runways instead, or look at other ways to disable the base.

The second criteria is important because it lets you neutralize the airfield by destroying the aircraft based there. A lot of large civilian airports have many access points and runways, but typically very unprotected parking spaces, so if faced with this kind of facility, then the logical target is the aircraft themselves, often arranged in fairly dense parking areas, and vulnerable to strikes. Military bases will often have revetments or hangars which will limit damage (particularly blast damage to the surroundings), and so it will be harder to eliminate the aircraft, though in some cases only fighters will be protected by hangars, with larger aircraft like AWACS/Tankers/etc. left in the open. The worst targets are those with underground aircraft storage, as these take either specialized munitions or a lot of bombardment to crack open.

Lastly, looking at how ammo is stored can provide a third approach to neutralizing a base. Most bases will have several ammo depots/bunkers, but some will only have one, and if this is only a surface depot then it presents a clear vulnerability. Even a single ammo bunker may be the easiest target in a hardened base, especially if you have the correct weapons. This last one is also of course dependent on if you are using the 'unlimited weapons at bases' realism option.

Submarine & Anti-Submarine Operations

My submarine's batteries are drained. How do I recharge?

Go to periscope depth. The submarine will automatically raise the snorkel, start the diesel generators, and begin recharging batteries. If you want to recharge batteries faster, set throttle to creep so that you don't drain the batteries while you recharge.

How do I deploy towed array sonars?

Towed array sonars are automatically deployed and used in deep enough water. If you can see the faint Convergence Zone (CZ) rings around your ship/sub then you have a towed array operational.

How are submarine communication handled?

You're allowed to actively control units and share information between them even in situations when it would be impossible in real life.

If you feel there is too much communications between units, you can choose to add surface units and the submarines (or each

submarine) to separate sides. You can control how much information they share, without making them hostile to one another, by setting side postures as either friendly (shares location and treats anyone attacking you as hostile) or neutral (is not hostile but does not share information, etc.). You get some interesting results by setting side A as friendly to side B but setting side B as neutral to side A.

How do I get helicopters (or aircraft) to search for submarines?

To set up ASW patrols define an area using reference points. Create a mission "Patrol/ ASW" and assign the vessels and/or helicopters and/or aircraft to that mission.

I'm trying to change the depth of my submarine but my orders are ignored. Why??

If you're on an ASW or Sea Control mission the logic will dictate speed and depth. You can use the Unassign (U) hotkey to remove the unit from the mission. If you'd like more manual control, turn off the automatic evasion ROE as this controls the engaged defensive logic.

Simulator Mechanics

Command is missing a feature that I'd really like to see implemented. What can I do?

Please go to [Gameplay Features](#) thread. If your feature is already on the list and wish it to receive higher priority bump it with your vote. If not, write a post with your request and it might be added to the list.

Are High Off-Boresight (HOB) Air-to-Air Missiles (AAMs) simulated?

There's both a HOB flag for weapons and a Helmet Mounted Display (HMD) flag for aircraft. The two can but don't always combine. The simulator is modelling each of these factors as having a cumulative effect. So:

- Standard missile, guided weapon, or torpedo: 40 degrees firing arc
- HOB missile: +20 deg.
- HMD: +30 deg.

So for example an early MiG-29 Fulcrum A with AA-8 Aphid [R-60TM] (HMD, no HOB) has 70-deg capability. An F-16C Fighting Falcon with AIM-9X Sidewinder (HOB) but no HMD can shoot up to 60 deg. And a Su-27 Flanker with AA-11 Archer [R-73] or F-15I Eagle with Python 4 (HOB + HMD) can go all the way to 90 deg.

Do anti-air missiles have their base hit probabilities adjusted for range?

To reflect their reduced manoeuvrability at extended range, rocket-powered weapons (most missiles) have their PHs maximized at 50% of maximum range and gradually reduced up to 50% of the base-PH at full range. Ramjet-powered weapons (Sea Dart, SA-6, Meteor etc.) are less affected; they maintain their full base-PHs up to 75% of maximum range and their max PH reduction is 25% of original.

Do aircraft bombsight affect bombing accuracy?

Yes the bombsight affects the Circular Error Probability (CEP) for ballistic weapons (bombs and rockets) as follows.

- Basic: No reduction
- Ballistic Computing: 25% reduction
- Advanced Computing: 50% reduction

- Advanced Navigation (INS/GPS): 75% reduction

How does the sim treat periscopes?

Periscopes are automatically raised when the submarine gets to periscope depth.

Can flying boats land on water?

Not in Command v1.04. We would like to add this in the future though.

Is the cloud cover spread throughout the whole world evenly, or localized in areas?

In Command v1.04 the weather is the same everywhere on the globe. Configurable localized weather is planned.

A group of infantry platoons moves but they are travelling at a really slow speed, why?

Land units move very slowly in harsh mountainous terrain. You can use the Relief map layer to visualize this, or the "Slope %" text on the map cursor for precise info. Once they get to flatter terrain they'll pick up speed.

Is water depth taken into account?

Water depths do not currently have an effect for ships. However, water depths affect submarine operations and will force submarines to periscope depth or even to surface.

Sensor Modelling

How are sensors modelled in the simulator?

Sensors work according to their RL counterparts. Radars are affected by factors such as weather, clutter, jamming (true radar

equation, incl. propagation loss), line of sight, horizon (incl. surface effect) and others. Likewise for sonar (passive, active, ping intercept), visual and IR sensors, electronic warfare (ESM/ECM) and so on. Some types of sensors like laser designators/rangers and MAD have simpler models.

The radar model takes a great number of factors into account, like frequencies, horizontal and vertical beamwidth, System Noise Level, Processing Gain/Loss, Peak Power, Pulse Width, Blind Time (yes we simulate pulse compression!), PRF, min & max range, min & max altitude, scan interval, range/height/angle resolution, various capabilities such as air/surface/ground/periscope & range/altitude/speed/heading (RASH) info, OTH-B/OTH-SW, pulse-only & early/late doppler with limited/full LSDS, MTI, NCTR, Phased Array continuous target tracking, CW and CWI capability.

Does the weather affect sensors?

Yes, it affects most sensors. Particularly visual & IR but also radar at certain frequencies.

Command's predecessors, Harpoon 2 and Harpoon 3, had an excellent "random weather generator" with believable variable weather fronts. The problem was that the different weather conditions didn't really affect sensors/weapons much (e.g. you could drop an LGB in the middle of a tropical storm no problem).

The Command 1.04 weather model is simpler in terms of generation/variability but its effects actually impact you. And wait till you see what happens when we activate air-operations being limited by night & bad weather... You will wish you hadn't asked for weather effects in the simulator!

Does weather affect underwater acoustics as well, or just surface and above?

It affects sonar performance in the surface duct (e.g. shallow sub vs ship or shallow sub vs shallow sub). Once you go below below shallow the weather does not affect you except from the local temperature which affect the strength of the thermal layer.

How detailed is your radar model?

Click on the screenshots to the right for a full view. They are taken from the Radar Calc MS/Excel sheets that we've used to balance out the radar sensors in Command, and should give some clues about the input parameters that we use and also the model's complexity. Note that stats from public sources are in **black**, our guessimations are in **red**. There is only one operating mode per radar set, which is the most typical operating mode. The radar model also has range capping (see Max Rng column) to simulate PRF cutoff and scope limitations.

The 1980-2015+ database for Command 1.04 contains 1917 (finished) radars and they've all been balanced out like this. The 1946-1979 database has a load of earlier sets extinct by 1980. The database editor uses the same Visual Basic sensor code as the simulator and the MS/Excel spreadsheet, and also does a bunch of sample calcs in the database editor itself to make sure the input stats aren't out of whack.

How do your ESM / RWR sets work?

There are 698 ESM/RWR systems in the Command 1.04 database. To the right is a screenshot showing range estimations for some ESM sets against five typical radar sets. You can click on the screenshots for a full view. **Black** stats are from public sources, **red** are our guesses.

As you can see, high-end ESM/ELINT sets produce some pretty ridiculous range estimates against powerful radars.

What is the electronic warfare (ECM) model like?

To the right are some ECM vs radar examples. You can click on the screenshots for a full view. As you can see it is pretty complex. **Black** stats come from declassified sources, **red** stats are our guessimations. The effects assumes the target radar antenna points directly at the jammer beam. Sidelobe jamming (which Command also simulates) has less effect.

We even developed our very own radar and electronic warfare simulator while building the radar and electronic warfare models for Command. We are considering releasing it to the public so that the players can look at the models in detail, but haven't had the time to 'productify' it yet.

How does stealth work with F-117A Nighthawk, B-2A Spirit, and other stealth aircraft?

Stealth and low-observable aircraft and ships in the database have smaller radar, visual and IR signatures than other units. The simulator uses several different generations of radar stealth and various signature modifiers to produce realistic detection ranges. We also simulate the fact that A to D-band radars are far better at detecting stealth aircraft than E to K-band radars.

The AN/FPS-130 is a D-band long-range air search radar which means it is quite effective against stealth aircraft since the wave length is equal to the aircraft or big fuselage components such as wings or tails. This produces resonance effects which give good radar returns. This is not the case for E to K-band radars, and the effect of LO shaping is much, much higher.

How do Low Probability of Intercept (LPI) radars work?

In Command, LPI radars use their real-life power output (0.1W or 1W) and pulse lengths but have much lower System Noise Levels and better Processing Gain/Loss than conventional sets. We do not simulate the 'ESM-style analysis techniques' used by these radars in real life, we adjust the processing gain. As such LPI radars work just like any other radar set except they are counter-detected at much shorter ranges.

RWRs have much smaller antennas than the LPI radars, and thus the LPI has an advantage as it uses signal analysis methods similar to that of ESM gear. That means modern LPIs are often detecting stuff before being counter-detected, and this is also the case in the simulator. For more advanced RWRs and ESM sets the LPI will be picked up at longer ranges

Are snorkelling subs visible to radar?

Yes, the periscope can be detected by radars that have the ability to search for periscopes (not many of them).

A SARH-guided missile flew to the target and hit, but the target was outside the radar's search arc. Why?

The radar "wedge" being displayed on the map represents the `_search_` scan limits of the shooter's radar. The `_illumination_` angle limits of the radar are actually a bit wider than that (this is not a game cheat, it's RL practice), to allow the shooter to jink while guiding the missile and thus mess up the kinematic calculations of a counter-shot. (Yes, our AAW expert is a real stickler for detail.). Hence the jinking that you observed.

If the shooter is forced to "flinch" and breakaway out of the azimuth limits in order to evade an attack, you will notice a time value (in seconds) next to the weapon(s) being guided. This indicates that the weapon is "blind". Once a pure-SARH weapon like the Sparrow goes blind for 5 seconds or more, it self-destructs.

How do you calculate horizon limitations?

We're not using $3.57 * (\sqrt{h1} + \sqrt{h2})$ or $4.12 * \sqrt{h}$ textbook approximations. We use earth radius, tangent angle, etc to calculate surface angle etc etc.

What is a semi-active seeker, and how do they work in the simulator?

Semi-active seekers home in on radar or laser energy reflected from the target. An illuminator is a type of radar or laser that paints a target with energy for the weapons to home in on. Basically an illuminator is a big bright light that other weapons know to track.

Illuminators require line-of-sight to the target and are limited by the horizon, so if planet earth is between you and it, you cannot fire your weapon. Worse, laser illuminators cannot see through fog or clouds, which makes Laser Guided Bombs (LGBs) useless in these conditions.

Illuminators are automatically turned on in the simulator when Semi-Active Radar Homing (SARH) or Semi-Active Laser Homing (SALH) weapons are fired.

Illuminator beams are displayed as a broken red line leading from shooter to target. To display these, go to Map Settings -> Illumination Vectors, and set them to be displayed for the selected unit, all units or none by clicking on your choice in the menu. The option is set to None by default to reduce the clutter on the display.

For further information, please visit the [Missile Guidance](#) article on Wikipedia.

Scenario Editing

How do you determine Complexity and Difficulty

The complexity and difficulty level for a scenario is subjective. Difficulty is how hard a given scenario is. Complexity is how many units are in the scenario and the nuances of the victory conditions.

What are the 'Single Unit Airfields' in the database, and how do I use them?

The Single Unit Airfields are "all in one" units. You would normally use them for air bases that are not targets and are generally the

preferred unit to use as the number of active units in a scenario does impact game speed.

If you'd like to build an airbase from scratch you must have at least 1 runway unit, 1 access point or taxiway, 1 unit A/C holding unit (tarmac, A/C revetment, open parking space, hanger etc), 1 Ammo holding unit (ammo dump, ammo revetment, ammo pad) and at least one fuel facility (AvGas, not really active as per Command v1.04 but should be there). The manual covers airbase construction and deconstruction in detail.

Is there an upper limit to the number of units I can have in a scenario?

The number of units that the simulator engine can handle is almost unlimited (a few billions), however the core calcs aren't cheating as much as in earlier games and/or simulators so the more stuff you add the more calcs need to be done. Performance is also affected by units plotting complex nav paths, a lot of long-range sensors, lots of jammers, etc, etc.

I selected a carrier group and added aircraft, and some were distributed to destroyers. Why?

If you select to add multiple ships then the simulator will spread the aircraft among them. The solution is to switch to Unit View, select the aircraft carrier, and add the aircraft on a per-ship basis.

Do I need to fill aviation magazines with drop tanks, sonobuoys and gun ammo?

No. Drop tanks, sonobuoys and gun ammo are 'free', i.e. in unlimited supply. You do not have to worry about their quantities, and here is no point in adding them to aviation magazines.

How can I find out what a particular aircraft carrier type's normal complement of aircraft is?

There are many web sites where this info is at. For US Navy carriers we can strongly recommend the [Go Navy site](#):

What about CVBG ship composition? Any good suggestions for that?

Often, ships would join and leave a battlegroup during a work-up and cruise, so the ships that started a deployment may not necessarily be the same that completed the deployment. For a general idea of what deployed with a battlegroup, one creative idea is to look up the cruise book of the carrier in question. Usually, there is a battlegroup photo near the front of the book. You can ID the type and number of ships from the photo (although not the name). In 1985-87 Commander, Cruiser-Destroyer Group 8 was the embarked flag on USS SARATOGA, so you could also research what the assigned ships were for Cruiser-Destroyer Group 8 at that particular time.

Today, CVBGs typically deploy with a CG and 3-4 DDGs. Probably an SSN attached to it, too. The trick is that if there's no real or perceived threat, only the CG will typically stick with the CVN. The DDGs and SSNs might be scattered all across the place. Ditto with PHIBRONs – the LHD might be 2000 miles away from the LSD and 1000 miles away from the LPD that it sailed with. They typically only come together for contingency ops and collective MEU training. I'm not even sure if an ARG deploys with a DDG anymore. The battlegroup photo is normally early in the cruise book. For instance, the image below is from the [USS Saratoga 1987 cruisebook](#).

Also, try googling "Command History" with the ship name or the embarked flag's command, for instance "COMGRUDESGRU EIGHT" "COMMAND HISTORY" The [Naval History Command website](#) may also be useful.

Good links:

[Cruise Books](#)

[BatGru Nomenclature](#)

If I add sensor, mount, etc to a unit in a scenario, will those modifications survive a database update?

Command lets you tweak individual platforms by adding and deleting weapons and sensors. Like, filling up ammo dumps on airfields, changing the VLS loadouts on ships, or updating submarine torpedo magazines.

But because these changes will be erased when you update the scenario to a new version of the database, the simulator lets you save any changes you have made to a special .ini file (using the Editor -> SBR -> Generate Delta Template command). This file contains all deviation from the database including any change in magazines.

When applied to a scenario, the file will restore the changes you made even after the updated scenario has been scrubbed by the new version of the database. This is covered in detail in the manual.

So every time you create a scenario you should also create an .ini file. Then add that to the scenario zip file so people can rebuild the scenario if they have to.

Is there a way show cities on the map?

You can insert a facility called 'Marker (City)' and rename as needed.

Is there some sort of "standard" aircraft complements for different ships in the database?

Not at the moment. However if you feel like taking on the task of compiling the necessary data we can provide you with a list of all the ships in the database in an XLS sheet. Then you can add the 'standard' or 'typical' helicopter/aircraft to each, and once finished we can add these to the database and update the sim GUI.

Should be a pretty straightforward job really, but need to check that the helicopter torpedo/missile magazines match up with those on the ship. I.e. a 2008 version of a Burke carries a correct version of the Seahawk, etc.

How do I put pictures in the scenario summary or briefing?

In Command 1.04 the only way to have a picture in the briefing is to have it fetched from a web-public address. We are working on a better system but it may take a while.

How can I convert Google Earth Placemarks to Installation (INST) files in Command?

You can use the KML-to-INST tool. For more information please go [here](#). The subject is also covered in the manual.

How can I fit a ship with future weapons loadout like LRASM?

In the Weapons window, add 0/29, 0/32, 0/61 or 0/64 weapon records to the mounts, depending on the number of VLS cells. Then load the number of weapons you want.

Can I add laser guns to my futuristic Arleigh Burke?

Yes you can, there are several laser cannons in the database already. Add the mount(s) through the Weapons window.

How were Soviet Red Banner Naval Aviation naval bomber regiments organized??

There were usually 3 squadrons per regiment; two bomber squadrons of 10-11 aircraft each, and one electronic attack squadron of 6-10 aircraft each.

Database Editing

Does the simulator come with a database editor?

No, Command does not come with a database editor. The ability to modify a database has been taken from a stand-alone programs and integrated into the Scenario Editor. You can customise platforms in the scenarios by adding/removing mounts, magazines, sensors and comm gear as well as changing weapon types and quantities, but you aren't able to add units or otherwise edit the database. This gives you the ability to do some new nifty things e.g. stick a Club-K container on an innocent merchant ship. The scenario design section of the manual explains how you can do this either through the editor or via templates.

There are many reasons why databases in Command are not directly editable.

First and foremost we did not want to repeat the database mess/confusion observed in Harpoon. We (the scenario authors) handled more than our fair share of support mails on database/scenario mismatches for that game. So for Command we wanted to shift all focus to scenarios. Command is pretty much a 'scenario sandbox' that started out as a scenario editor and

evolved into a simulator. Everyone on the Command development team has a long history of scenario design behind them, mainly for Harpoon2/3, and we wanted to make the ultimate scenario editor for ourselves and other naval war gaming fans out there – without the noisy database element.

As such, in Command there is no need to copy/overwrite database files or edit configuration files, followed by odd behaviour and crashes if database and scenarios don't match one hundred percent. Command scenarios know exactly what database they were built with based on the database's checksum (!), and a scenario will pick the right database upon load. We have received much positive feedback on this solution, as the players only have to care about what scenario to play rather than worrying about whether the scenario will crash with the currently installed database or not.

Second, the database for Command is very complex. Anyone who has spent time in the Harpoon2/3 database editor will immediately notice the increased number of parameters when they look in the Command DB Viewer. Editing or leaving out the wrong parameter could have rather negative impact on gameplay, generating a ton of unnecessary support tickets for the developer.

Third, having multiple user-created databases makes continued expansion of Command far more difficult. Any schema changes would also have to be applied (correctly!) to any 3rd party databases, each of which may or may not have been abandoned by its author at that point in time. There would also be the risk of making associated material (scenarios) unusable. The Command database schema & enum tables are updated regularly and keeping all database hobbyists up-to-date would be a monstrous task, both on the dev end and on the 3rd party end. It would not

take many weeks (or days!) before a new db author simply would give up.

Where can I submit my request for a new platform (aircraft, ship, submarine, facility, weapon, etc)?

The databases contain something like 10,000 platforms but if you still need a new platform for a scenario that you're working on feel free to give us a pling. Preferably with links to information from reliable sources.

You can request new 1946-1979 (Cold War) platforms [here](#). And 1980-2020+ (DB3000) platforms [here](#).

Please note that in order to add a new platform we need adequate data to model them with. There's a lot of pull from the community for access to emerging systems to play with as well as an expectation for technical accuracy. Having both (early access and full fidelity) is a knife edge to negotiate, and fancy new toys will often go through several complete rebuilds as more information gradually becomes available.

We are also quite selective about which hypothetical platforms we add.

There is an error in the platforms database. What can I do about it?

If you think you've found an error in the 1980-2020+ (DB3000) database, please report it [here](#). If the error is in the 1946-1979 (Cold War) database, please report it [here](#).

Where are the Colonial Wars Database (CWDB) and the DB3000 Database?

The databases are already installed on your system. Updated databases are released with the regular game upgrades.

Why was 1979 selected for the end of the Cold War Database rather than 1989?

1979 was in many ways a watershed year with the Soviet invasion of Afghanistan and the Iranian Revolution beginning to change superpower dynamics and the Cold War's end game unknowingly commenced. 1980 would see the Reagan era and the biggest peacetime military build up in history unfolding.

By the time the Cold War ended, much of the hardware was technologically mature and the current setup demonstrates this nicely. Each covers roughly thirty-years, about as long as a professional career in the armed forces of the given periods.

Also, there is platform overlap built into both databases so from a user standpoint when one database ends and the other begins is pretty much irrelevant. Also, no mother of a database from 1946 to near future is too big for one guy so Paul Bridge covers the 1946-1979 time frame and Ragnar Emsoy covers from 1980 onwards. Mike is working on both databases and is the land combat element expert.

I cannot find Charles de Gaulle carrier (of France) in the DB. Why?

There are in fact several entries in the database for the ship, representing different refits. Maybe you are playing a 1946-1979 scenario and are looking for the ship in the wrong platform database? Load a scenario that uses the 1980-2020+ platform database and you should find the ship.

How can I add images to the database and write platform descriptions?

The top line of each database entry in the Database Viewer has a number at the beginning (#1234). This is the platform's unique identification number.

Now an example for the Chilean PCFG LM 30 Casma. The Number for this ship is #1701, so you have to put a image of it in the database image folder as follows:

[Path_to_COMMAND_game_folder]\DB\Images\DB3000\Ship_1701.jpg

The Database Viewer will support up to seven photos: one main photo that scales with the size of the window, and two rows of three smaller photos. The Database Viewer will auto-detect the number of photos available and position them accordingly. It will look for files named as follows:

[type]_[id].jpg (main photo)
[type]_[id]_t1.jpg (thumbnail 1, optional)
[type]_[id]_t2.jpg (ditto)
[type]_[id]_t3.jpg (etc)
[type]_[id]_t4.jpg
[type]_[id]_t5.jpg
[type]_[id]_t6.jpg

For the description you create a .txt file with the description in it and save it to

[Path_to_COMMAND_game_folder]\DB\Descriptions\DB3000\Ship_1701.txt

Now you have image and description for this ship in your DB3000 database.

For the other types use:

Aircraft_[number].jpg / Aircraft_[number].txt,
Submarine_[number].jpg / Submarine_[number].txt and
Facility_[number].jpg / Facility_[number].txt

Lastly, most other players out there would love to have the same photos and descriptions you have added. And since there are tens of thousands of objects in the database it makes sense to share this with the community. But for this one had to respect the copyrights of the images and description texts. On Wikipedia the most images are applicable by mentioning the creator. There is some info about the conditions for using them under the images.

How extensive is the nuclear weapons database?

You can easily build something like the old game DefCon or SPIs World War 3. Here is a list of the nuclear weapons included in the 1980-2020+ database. Ca 180 in Command v1.04, and new ones are added regularly. The 1946-1979 database also has a large number of weapons not present in the 1980+ database, which starts literally from (and including) Little Boy and Fat Man.

[Here](#) is a quick demonstration of Command's strategic nuclear warfare capabilities.

- 53-58 Gyro [NATO 53-59N, 15kT Nuclear] — 1961, Submarine, November
- 53-65N Gyro [NATO 53-68N, 20kT Nuclear] — 1971, Submarine
- 65-73 Gyro [20kT Nuclear] — 1975-91

- AGM-129A ACM [150kT Nuclear] — 1993-2006
- AGM-69A SRAM [200kT Nuclear] — 1973-1993
- AGM-86B ALCM [200kT Nuclear] — 1983-1992
- AN.22 Bomb [60kT Nuclear] — 1968-1988
- AN.52 Bomb [25kT Nuclear] — 1973-92
- AS-15 Kent A [Kh-55, 200kT Nuclear] — 1984, Tu-95MS-6
- AS-15 Kent B [Kh-55SM, 200kT Nuclear] — 1987, Tu-95MS-16
- AS-16 Kickback [Kh-15, 200kT Nuclear]
- AS-2 Kipper [K-10SD, ASM, 200kT Nuclear] — 1967, Tu-16K-10D, LR Hi-Alt
- AS-2 Kipper [K-10SDV, ASM, 200kT Nuclear] — Tu-16K-10D, LR Low-Alt, Operational
- AS-2 Kipper [K-10SNB, ASM, 200kT Nuclear] — 1963?, Tu-16K-10N, SR Low-Alt, Operational
- AS-3 Kangaroo [Kh-20M, ASM, 800kT Nuclear]
- AS-4 Kitchen A Mod 1 [Kh-22PG ASM, 200kT Nuclear] — 1968, Tu-22K
- AS-4 Kitchen A Mod 2 [Kh-22M ASM, 350kT Nuclear] — 1976, Tu-22M-2, Tu-22KD
- AS-4 Kitchen A Mod 3 [Kh-22N ASM, 350kT Nuclear] — 1983? Tu-22M-2/3
- AS-4 Kitchen B Mod 1 [Kh-22PSI INS, 200kT Nuclear] — 1971, Tu-22K
- AS-4 Kitchen B Mod 2 [Kh-22MA INS+TERCOM, 350kT Nuclear] — 1976, Tu-22M-2, Tu-22KD
- AS-4 Kitchen B Mod 3 [Kh-22NA INS+TERCOM, 350kT Nuclear] — 1983? Tu-22M-2/3
- AS-4 Kitchen C Mod 1 [Kh-22P ARM, 200kT Nuclear] — Tu-22KP/KPD, Flawed
- AS-4 Kitchen C Mod 2 [Kh-22MP ARM, 350kT Nuclear] — 1980, Tu-22KP/KPD, Limited Service

- AS-4 Kitchen C Mod 3 [Kh-22NP ARM, 350kT Nuclear] — Not Adopted, Tu-22M-2/3
- AS-5 Kelt [KSR-2M, ASM, 1mT Nuclear] — 1972
- AS-6 Kingfish A Mod 1 [KSR-5, ASM, 350kT Nuclear] — 1971, Tu-16K-26/10-26
- AS-6 Kingfish A Mod 2 [KSR-5N, ASM, 350kT Nuclear] — 1973, Tu-16K-10-26N
- AS-6 Kingfish A Mod 3 [KSR-5M, ASM, 350kT Nuclear] — 1976, Tu-16K-26PM
- ASMP [300kT Nuclear] — 1987
- ASMP-A [300kT Nuclear] — 2011
- B-28 Strategic Bomb [1.45mT Nuclear] — 1958-1991
- B-43 Strategic Bomb [1mT Nuclear] — 1962-1991
- B-53 Strategic Bomb [9mT Nuclear] — 1953
- B-57 Multipurpose Sub Bomb [20kT Nuclear] — Aerial
- B-57 Multipurpose Surface Bomb [20kT Nuclear] — 1965
- B-61 Tactical/Strategic Bomb [340kT Nuclear] — 1968
- B-83 Strategic Bomb [1.2 mT Nuclear] — 1984
- BGM-109G Tomahawk GLCM [W80-0 200kT Nuclear]
- China Type 639-6 Strategic Bomb [3.3mT Nuclear]
- Depth Charge [10kT Nuclear] — Aerial
- Depth Charge [15kT Nuclear] — Aerial
- Depth Charge [20kT Nuclear] — Aerial
- Depth Charge [5kT Nuclear]
- Depth Charge [Aerial, 80kT Nuclear]
- DF-2 [12kT Nuclear, CSS-1] — 1969-1982
- DF-21 [500kT Nuclear, CSS-5 Mod-1] — Not Operational
- DF-21A [500kT Nuclear, CSS-5 Mod-2] — 1997
- DF-3 [3mT Nuclear, CSS-2] — 1972
- DF-31A [1.0mT Nuclear, CSS-9 Mod-2] — 2008
- DF-3A [3mT Nuclear, CSS-2 Mod-2] — 1989
- DF-4 [3mT Nuclear, CSS-3] — 1981
- DF-5 [3mT Nuclear, CSS-4 Mod-1] — 1982
- DF-5A [4 MIRV x 350kT Nuclear, CSS-4 Mod-2] — 1987
- FRAS-1 [RPK-1 Vikhr, 5kT Nuclear] — 1969
- FROG-7a [9M21, 20kT Nuclear] — R-65, R-70, 9K52 Luna-M
- Hatf 4 [150kT Nuclear, Shaheen 1] — 2004
- Hatf 6 [150kT Nuclear, Shaheen 2] — 2009
- Hatf 7 [150kT Nuclear, Babur] — Pakistan, 2006, Cruise Missile
- Jericho 1 [20kT Nuclear] — 1974
- Jericho 2 [1mT Nuclear] — 1991
- Jericho 3 [1mT Nuclear] — 2011
- JL-1 [500kT Nuclear, CSS-N-3] — 1988
- JL-2 [1mT Nuclear, CSS-N-4] — 2007
- Kh-102 [200kT Nuclear] — 2011
- LGM-118A Peacekeeper [W87 400kT Nuclear] — 1987-2005
- LGM-25C Titan II [W53 9mT Nuclear] — 1964-1987
- LGM-30F Minuteman II [W56 1.2mT Nuclear] — 1966-1993
- LGM-30G Minuteman III [3 MIRV x W62 170kT Nuclear] — 1971
- LGM-30G Minuteman III [3 MIRV x W78 335kT Nuclear] — 1983
- LGM-30G Minuteman III [W87 400kT Nuclear] — 2009
- M1/TN41 [1mT Nuclear] — 1971
- M2/TN41 [1mT Nuclear] — 1975
- M20/TN60 [1.2mT Nuclear] — 1978
- M45/TN75 [6 MIRV x 150kT Nuclear] — 1998
- M4A/TN70 [6 MRV x 100kT Nuclear] — 1986
- M4B/TN71 [6 MRV x 150kT Nuclear]
- M51/TN75 [6 MIRV x 150kT Nuclear] — 2011
- MGM-31B Pershing IA [W50 400kT Nuclear] — 1971-1991
- MGM-31C Pershing II [W85 50kT Nuclear] — 1985-1989
- MGM-52C Lance [100kT Nuclear] — 1974-1992
- Popeye Turbo [20kT Nuclear] — Israel, Submarine

- RGM-109A Tomahawk TLAM-N [W80-0 200kT Nuclear] — 1985-1991
- RIM-2D Terrier [W45-0 1kT Nuclear] — SAM-N-7 BT-3A(N)
- RIM-8B Talos [W30 5kT Nuclear] — 1960, SAM-N-6bW
- RIM-8D Talos [W30 5kT Nuclear] — 1961, SAM-N-6bW1
- RIM-8E Talos [W30 5kT Nuclear] — 1963, SAM-N-6c1 Unified, SARH
- RN-24 Tactical Bomb [10kT Nuclear] — Russia, Su-24
- RN-28 Tactical Bomb [1kT Nuclear] — Russia, 8U49, Su-24
- RN-30 Strategic Bomb [200kT Nuclear] — Russia
- RN-32 Strategic Bomb [200kT Nuclear] — Russia
- RN-40 Tactical Bomb [30kT Nuclear] — Russia, 8U-64, MiG-23, MiG-27, MiG-29 (9-12)
- RN-42 Strategic Bomb [200kT Nuclear] — Russia
- RUR-5A Mod 3 ASROC RTD [10kT Nuclear DC] — 196x-89
- SA-2e Guideline [S-75M Volkhov, 15E / V-760, 25kT Nuclear] — 1965, Soviet Only
- SA-2f Guideline Mod 2 [S-75M3 Volkhov, 5V29 / V-760V] — 1976, Nuclear 5YA23 / V-759
- SA-5b Gammon [5V28, 25kT Nuclear] — 1972, S-200V Vega
- SH-04 Galosh ABM [ABM-1B, Nuclear] — 1972
- SH-08 Gazelle ABM [ABM-3 / 53T6, Nuclear] — 1989
- SH-11 Gorgon ABM [ABM-3 / 51T6, Nuclear]
- SS-11 Sego Mod 1a [UR-100 / RS-10, 1.1mT Nuclear] — 1966, 8K84, Withdrawn by 1974
- SS-11 Sego Mod 1b [UR-100UTTH / RS-10, 1.3mT Nuclear] — 1970, 8K84M
- SS-11 Sego Mod 2 [UR-100K / RS-10M, 1.3mT Nuclear] — 1971, 15A20
- SS-11 Sego Mod 3 [UR-100U / RS-10M, 3 MRV x 350kT Nuclear] — 1974, 15A20U
- SS-12a Scaleboard [9M76, 500kT Nuclear] — 1963-1987, 9K76 Temp-S
- SS-12b Scaleboard [9M72, 500kT Nuclear] — Not Operational, 9K71 Temp
- SS-13 Savage Mod 1 [RS-12, 750kT Nuclear] — 1969-19xx, RT-2 Temp-2
- SS-13 Savage Mod 2 [RS-12, 750kT Nuclear] — 1975-1995, RT-2 Temp-2
- SS-16 Sinner [RS-14, 1mT Nuclear] — 1979-1985, RT-21 Temp-2S, Experimental Deployment
- SS-17 Spanker Mod 1 [MR-UR-100 / RS-16A, 4 MIRV x 750kT Nuclear] — 1976-1991
- SS-17 Spanker Mod 2 [MR-UR-100 / RS-16A, 3.5mT Nuclear] — 1976-1991
- SS-17 Spanker Mod 3 [MR-UR-100UTTH / RS-16B, 4 MIRV x 750kT Nuclear] — 1981-1996
- SS-18 Satan Mod 1 [R-36M / RS-20A, 24mT Nuclear] — 1976-1984
- SS-18 Satan Mod 2 [R-36M / RS-20A, 8 MIRV x 1.3mT Nuclear] — 1976-1983
- SS-18 Satan Mod 3 [R-36MUTTKh / RS-20B, 24mT Nuclear] — 1980
- SS-18 Satan Mod 4 [R-36MUTTKh / RS-20B, 10 MIRV x 550kT Nuclear] — 1980-2010
- SS-18 Satan Mod 5 [R-36M2 / RS-20V, 10 MIRV x 750kT Nuclear] — 1989
- SS-18 Satan Mod 6 [R-36M2 / RS-20V, 20mT Nuclear] — 1992
- SS-19 Stiletto Mod 1 [UR-100N / RS-18A, 6 MIRV x 550kT Nuclear] — 1976-1983
- SS-19 Stiletto Mod 2 [UR-100N / RS-18A, 5mT Nuclear] — 1978

- SS-19 Stiletto Mod 3 [UR-100NUTTH / RS-18B, 6 MIRV x 750kT Nuclear] — 1980
- SS-1c Scud B [8K14-8F14, 70kT Nuclear] — 1962, 9K72 Elbrus
- SS-1d Scud C [70kT Nuclear] — Never Operational
- SS-21a Scarab [9M79B, 100kT Nuclear] — 9K79 Tochka
- SS-21b Scarab [9M79B-1, 100kT Nuclear] — 1990, 9K79-1 Tochka-U
- SS-23 Spider [9M714V, 200kT Nuclear] — 1981-1990
- SS-24 Scalpel Mod 1 [RS-22, 10 MIRV x 550kT Nuclear] — 1990-2002, Silo
- SS-24 Scalpel Mod 2 [RS-22, 10 MIRV x 550kT Nuclear] — 1988-2005, Rail-Based
- SS-25 Sickle [RS-12M Topol, 750kT Nuclear] — 1989
- SS-27 Sickle B [RS-12M1 Topol-M, 550kT Nuclear] — 1999
- SS-29 Sickle B Mod 2 [RS-12M2 Topol-M, 550kT Nuclear]
- SS-4 Sandal Mod 1 [R-12, 2.3mT Nuclear] — 1959, 8K63
- SS-4 Sandal Mod 2 [R-12U, 2.3mT Nuclear] — 1963, 8K63U
- SS-5 Slean Mod 1 [R-14, 2.3mT Nuclear] — 1962, 8K65
- SS-5 Slean Mod 2 [R-14U, 2.3mT Nuclear] — 1965, 8K65U
- SS-9 Scarp Mod 1 [R-36, 18mT Nuclear] — 1967-1975, 8K67
- SS-9 Scarp Mod 2 [R-36, 25mT Nuclear] — 1967-1975, 8K67
- SS-9 Scarp Mod 3 FOBS [R-36O, 5mT Nuclear] — 1968-1970, 8K69, Fractional Orbital Bombardment System
- SS-9 Scarp Mod 4 [R-36P, 3 MRV x 2mT Nuclear] — 1972-74, 8K67P
- SS-N-12 Sandbox Mod 1 [P-500 Bazalt , 350kT Nuclear] — 1976
- SS-N-12 Sandbox Mod 2 [P-1000, 350kT Nuclear] — 1988
- SS-N-14 Silex [60R, 5kT Nuclear Depth Charge] — 1969
- SS-N-15 Starfish [RPK-2 Viyoga, 5kT Nuclear] — 1970, 82R
- SS-N-15 Starfish [RPK-6 Vodopad, 5kT Nuclear] — 1982, 83R
- SS-N-16 Stallion [RPK-7 Vodopei, 10kT Nuclear] — 1985, 84R
- SS-N-17 Snipe [3M17, 500kT Nuclear] — 1980-1991, 1x Yankee SSBN
- SS-N-18 Stingray Mod 1 [3 MIRV x 500kT Nuclear] — 1978
- SS-N-18 Stingray Mod 2 [450kT Nuclear]
- SS-N-18 Stingray Mod 3 [7 MIRV x 200kT Nuclear]
- SS-N-19 Shipwreck [P-700 Granit, 200kT Nuclear] — 1984
- SS-N-20 Sturgeon [10 MIRV x 200kT Nuclear]
- SS-N-21a Sampson [S-10 Granat, 200kT Nuclear]
- SS-N-21b Sampson [S-10 Granat, 200kT Nuclear]
- SS-N-22 Sunburn [P-80 Zubr, 200kT Nuclear] — 3M80
- SS-N-23 Skiff [4 MIRV x 100kT Nuclear] — 1986
- SS-N-32 [6 MIRV x 150kT Nuclear]
- SS-N-3a Shaddock [P-6, ASM, 350kT Nuclear] — 1965
- SS-N-3b Shaddock [P-5D, AGM, 350kT Nuclear] — 1962-1966
- SS-N-3c Shaddock [P-35 Progress, ASM, 350kT Nuclear]
- SS-N-5 Sark [800kT Nuclear] — 1964-1988
- SS-N-6 Serb Mod 1 [1mT Nuclear, R-27 Serb] — 1969, 4K10
- SS-N-6 Serb Mod 2 [1mT Nuclear, R-27U Serb]
- SS-N-6 Serb Mod 3 [3 MRV x 200kT Nuclear]
- SS-N-7 Starbright [P-70 Ametist, 200kT Nuclear]
- SS-N-8 Sawfly Mod 1 [1mT Nuclear] — 1974
- SS-N-8 Sawfly Mod 2 [800kT Nuclear]
- SS-N-9 Siren [P-120 Malakhit, 200kT Nuclear]
- T-20 Strategic Bomb [20mT Nuclear]
- T-5 Strategic Bomb [5mT Nuclear]
- T-50 Strategic Bomb [50mT Nuclear]

- Tactical Bomb [8U69, 5kT Nuclear] — Russia, Izdelie 244N, First
- Tactical Bomb, Su-7B, MiG-21
- UGM-109A Tomahawk TLAM-N [W80-0 200kT Nuclear] — 1985-1991, TT
- UGM-109A Tomahawk TLAM-N [W80-0 200kT Nuclear] — 1985-1991, VLS
- UGM-133 Trident II D5 [4 MIRV x W88 475kT Nuclear]
- UGM-133 Trident II D5 [8 MIRV x W76 100kT Nuclear] — 1991
- UGM-27C Polaris A3 [3 MRV x W58 200kT Nuclear] — 1965-1996
- UGM-73A Poseidon C3 [10 MIRV x W76 100kT Nuclear] — 1972-1993
- UGM-96A Trident C-4 [8 MIRV x W76 100kT Nuclear] — 1980-2005
- UUM-44A SUBROC [10kT Nuclear DC] — 1966-1989
- WE.177 Type A Depth Charge [15kT Nuclear] — 1966-1998, Aerial
- WE.177 Type B [400kT Nuclear] — 1966-1995
- WE.177 Type C [300kT Nuclear] — 1973-1998

What battleships are included in the database?

The battleships included in the 1946-1979 database are as follows:

- BB 43 Tennessee — United States (Navy), 1947-1959, In Reserve
- BB 44 California — United States (Navy), 1947-1959, In Reserve
- BB 45 Colorado — United States (Navy), 1947-1959, In Reserve
- BB 46 Maryland — United States (Navy), 1947-1959, In Reserve

- BB 47 West Virginia — United States (Navy), 1947-1959, In Reserve
- BB 55 North Carolina — United States (Navy), 1947-1961, In Reserve
- BB 56 Washington — United States (Navy), 1947-1960, In Reserve
- BB 57 South Dakota — United States (Navy), 1947-1962, In Reserve
- BB 58 Indiana — United States (Navy), 1947-1962, In Reserve
- BB 59 Massachusetts — United States (Navy), 1947-1962, In Reserve
- BB 60 Alabama — United States (Navy), 1947-1962, In Reserve
- BB 61 Iowa — United States (Navy), 1944-1950
- BB 61 Iowa — United States (Navy), 1953-1958
- BB 61 Iowa — United States (Navy), 1966
- BB 62 New Jersey — United States (Navy), 1943-1950
- BB 62 New Jersey — United States (Navy), 1953-1957
- BB 62 New Jersey — United States (Navy), 1967-1969
- BB 63 Missouri — United States (Navy), 1944-1955
- BB 64 Wisconsin — United States (Navy), 1944-1953
- BB 64 Wisconsin — United States (Navy), 1953-1958
- BB 67 Montana — United States (Navy), 1953-1958
- BB Almirante Latorre — Chile (Navy), 1942-1959, -Last Refit
- BB Anson — United Kingdom (Royal Navy), 1942-1951
- BB Anson — United Kingdom (Royal Navy), 1951-1955, - Reserve, scrapped 1957
- BB Duke of York — United Kingdom (Royal Navy), 1941-1949
- BB Duke of York — United Kingdom (Royal Navy), 1950-1955, -Reserve, scrapped 1957

- BB Gangut — Soviet Union [-1991] (Naval Fleet [V-MF]), 1911-1956
- BB Howe — United Kingdom (Royal Navy), 1942-1951
- BB Howe — United Kingdom (Royal Navy), 1951-1957, - Reserve, scrapped 1958
- BB Jean Bart — France (Navy), 1949-1953
- BB Jean Bart — France (Navy), 1953-1961
- BB King George V — United Kingdom (Royal Navy), 1940-1949
- BB King George V — United Kingdom (Royal Navy), 1950-1955, -Reserve, scrapped 1957
- BB Oktoberskaya Revolutsia — Soviet Union [-1991] (Naval Fleet [V-MF]), 1951, Cancelled Project
- BB Richelieu — France (Navy), 1949-1960
- BB Vanguard — United Kingdom (Royal Navy), 1946-1960
- BB Vanguard — United Kingdom (Royal Navy), 1962, Proposed Refit
- BB Vanguard — United Kingdom (Royal Navy), 1975, Proposed Refit
- KR Kronshtadt — Soviet Union [-1991] (Naval Fleet [V-MF]), 1949
- KR Stalingrad — Soviet Union [-1991] (Naval Fleet [V-MF]), 1956
- RKR Stalingrad (SS-N-2) — Soviet Union [-1991] (Naval Fleet [V-MF]), 1961, Cancelled Project
- RKR Stalingrad (SS-N-3) — Soviet Union [-1991] (Naval Fleet [V-MF]), 1963, Cancelled Project
- BB 61 Iowa — United States (Navy), 1990-1990
- BB 62 New Jersey — United States (Navy), 1983
- BB 62 New Jersey — United States (Navy), 1987
- BB 62 New Jersey — United States (Navy), 1989
- BB 62 New Jersey — United States (Navy), 1991-1991
- BB 63 Missouri — United States (Navy), 1987
- BB 63 Missouri — United States (Navy), 1989
- BB 63 Missouri — United States (Navy), 1991-1992
- BB 64 Wisconsin — United States (Navy), 1989
- BB 64 Wisconsin — United States (Navy), 1991-1991
- RKR Admiral Lazarev [Pr.1144 Orlan, Ex-Frunze] — Russia [1992-] (Navy), 1992-1994
- RKR Admiral Nakhimov [Pr.1144 Orlan, Ex-Kalinin] — Russia [1992-] (Navy), 1992-1999
- RKR Admiral Nakhimov [Pr.1144 Orlan, Ex-Kalinin] — Russia [1992-] (Navy), 2006
- RKR Frunze [Pr.1144 Orlan] — Soviet Union [-1991] (Naval Fleet [V-MF]), 1985-1991, Admiral Lazarev
- RKR Kalinin [Pr.1144 Orlan] — Soviet Union [-1991] (Naval Fleet [V-MF]), 1989-1991, Admiral Nakhimov
- RKR Kirov [Pr.1144 Orlan] — Soviet Union [-1991] (Naval Fleet [V-MF]), 1980, Admiral Ushakov
- RKR Kirov [Pr.1144 Orlan] — Soviet Union [-1991] (Naval Fleet [V-MF]), 1984-1991, Admiral Ushakov
- RKR Petr Velikiy [Pr.1144 Orlan, Ex-Yuri Androvo] — Russia [1992-] (Navy), 1999

1980-2015+ database:

- BB 61 Iowa — United States (Navy), 1983
- BB 61 Iowa — United States (Navy), 1987
- BB 61 Iowa — United States (Navy), 1989