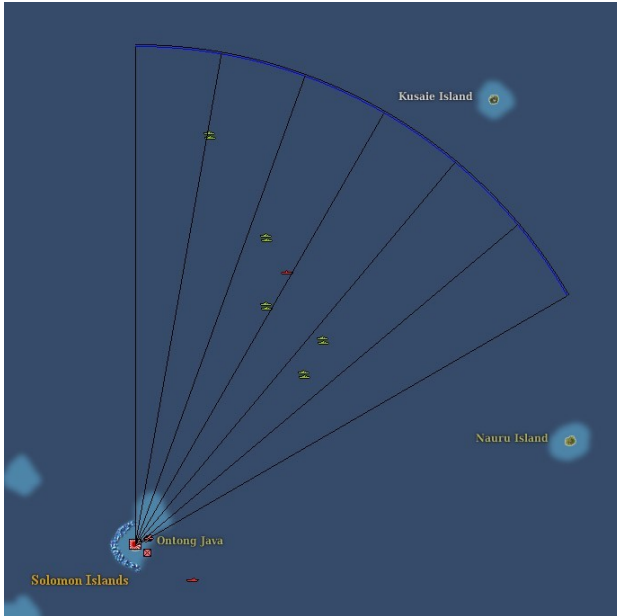


Naval Search (NavS)

First started this to test Glens usefulness but it escalated. Much of this is well known, this just confirms it but there might be something...



I've carried out the test using v28.4 on naval search with each test being run for 15 times. Mostly a single sub with glen surrounded by five US TF at varying ranges between 1-4 hexes. From N to S the TFs were; 2 ship (DD, AO) at 4 Hex, 3 ships (CA, CL, DD) at 1H, 9 ships (CV, 4xCA, 4xDD) at 1H, 6 ships (CV, 2xCA, 3xDD) at 2H, 2 ship (DD, AO) at 3H.

I also searched from Truk and an enlarged Ontong Java. Here's there locations, Truk being 15 Hexes NW of the sub.

I did have one at zero range but the TFs detected each other and attacked so scrubbed that idea.

All ships were set to remain on station with no destination set. Each test ran for 15 turns, yeah not many but I know but I did run about 50 odd test and it was enough to show how it worked.

As it turns out I was doing it wrong, at least with FPs. This was down to altitude. I tended to fly NS at 2-5K and this is wrong it needs to be above 5K for an effective search.

General detection rates (DR) observations

- NavS missions and NavS patrols seem to behave exactly the same.
- PA aircraft seem better than FPs which in turn are better than any other aircraft type that can fly NavS. For PA this is probably down too endurance (more time in the search area).
- Only NavS or ASW found anything.
- The larger the TF the better the DR.
- Strange things can happen on the first turn.
- A spotted TF is easier to keep it spotted.
- A moving TF is harder to find and harder to keep spotted.
- If you're looking at the map and in the right place during execution phases you can see detected TF flash up on the screen. They might not stay for the orders phase.
- Enemy flying activity does not improve DR. Any form of combat they take part in however, can and mostly does.

Arcs v General searches

- Arcs work.
- Arcs only find TFs within their search sectors except for the 'visibility' thing. General searches find stuff all around.
- Arcs search further, going out to the max range.
- Arcs have a better DR in the sectors searched than general searches. Mostly down to more AC in each sector.
- Pilots appear to fly fewer general missions.

Height

- Flying NS $\leq 5K$ has poor detection rates. Flying above 5K gives excellent detection rates.
- ASW is more effective than NavS at finding surface TF at altitudes $\leq 5K$.

Using a Glen the first 5 searches, between 0-3 hex range, carried out produced only 9 detections, less than 2 per turn and often just one. For the 6th test I went up to 11K and immediately got 14 detections and that was with a 2 hex range.

I got similar detection rates (DR) at 6K, 10K and 15K. I never test above 15K. As soon as I went below 6K DR dropped off dramatically.

Range

- NavS ranges are based on the max range set.
- Patrol ranges are independent from mission ranges. E.g. An ASW patrol always has half the range set, likewise a NavS patrol always operate to the max range set.
- DR are better at shorter ranges.
- Search range less than $\frac{2}{3}$ an aircraft's normal range seems to work the best and the further you push it the more DR fall off.
- General searches detect range is always one less than the max range set. Mostly one but at longer ranges, Emily at 18 for instance, it was two.
- Arcs searches further, going to the max range set but detect nothing past it.
- The 'visibility' thing resulted in detections up to two hexes from an aircraft's base no matter what range was set.

Using the Emily I did detect a 2 ship TF at 24 hexes during a single 15 turn test. Here are the figures for that test. (15 at 11 hex, 9 at 14, 14 at 16, 14 at 17, 7 at 24).

I did not exceed an aircraft's normal radius when setting max range, for a Glen it's 3, a Jake 8 and an Emily 24.

Visibility

- Search AC appear to be able to see up to 2 hexes at heights above 5K, 1K below I think.

This is inline with real life when LOS at 6K is roughly 80 miles (2 hexes).

Not obvious when using a general search but it is when using arcs. This was shown over and over again when TFs were detected out of arc (often in the complete opposite direction) and particularly noticeable close to the point of take off.

Aircraft numbers

- More aircraft searching means higher DR.

Another obvious one. Even a single AC flown above 5K will find stuff. Patrol levels, lost or unserviceable aircraft and number of pilots can all affect the numbers flying.

Setting 100% patrol level cripples an air group very quickly. Running at that rate for 6-7 turns can reduce a 12 strong AG to roughly half, carry on for 14 turns and you can expect to have only one often none available. Beware unserviceability.

I found 60% for continual use works, higher if you expect trouble and only run at 100% if you know were, when and from roughly what direction.

Weather

- Bad weather reduces DR

Perhaps not as dramatic as it should be but and don't expect a TF to go undetected in thunderstorms or to be detected in clear weather. Although area weather matters it's the hex weather that's important and these two are often not the same.

What I didn't see

- Automatic detection. There is no such thing except possibly between TF? Even TF in the same hex as an enemy bases can go undetected provided there's no combat. All bets are off once that happens. The size of the base doesn't matter.
- Flying any mission other than NavS or ASW find nothing.

ASW

Having tested NavS I thought I'd do ASW. Didn't learn much new but it did remind me of some obvious stuff that I'd forgotten but many things are similar.

Two things to remember about ASW, they:-

- fly at half the max range set (rounded down).
- Also find surface TFs.

The one thing I did learn was:

- ASW is more effective than NavS at finding surface TF at altitudes $\leq 5K$. It might even be the case that they are better at higher altitudes as well!

General ASW detection rates (DR) observations

- ASW missions and ASW patrols seem to behave exactly the same.
- ASW rates are much more varied than NavS rates.
- PA aircraft seem better than FPs which in turn are better than any other aircraft type that can fly ASW. For PA this is probably down to endurance (more time in the search area).
- Only ASW find subs.
- A spotted sub is easier to keep it spotted.
- A moving sub is much harder to find and much harder to keep spotted.
- If you're looking at the map and in the right place during execution phases you can see detected subs flash up on the screen. They might not stay for the orders phase.
- Enemy sub attacks do not seem to improve DR.
- DR are lower for subs than surface TF (what a surprise!).

Arcs v General searches

- Arcs work.
- Arcs only find subs within their search sectors. General ASW finds subs all around.
- Arcs search further, going out to the max range.
- Arcs have a better DR in the sectors searched than general searches. Mostly down to more AC in each sector.
- Pilots appear to fly fewer general missions.

Height

- Flying lower has better DR. 1-3K is best, but ACs do detect subs much higher and there's surprising little in it. e.g. One Emily test at 15k and got 19 DR out to 5 hexes. Testing at 1K produced 18.
- PA seem better than FP. (endurance maybe).

Range

- ASW range is half of max range set.
- Patrol ranges are independent from mission ranges. E.g. An ASW patrol always has half the range set, likewise a NavS patrol always operates to the range set.
- DR are better at shorter ranges.
- General ASW detect range is always one less than the max range set.
- Arcs searches further up to half max range set but detect nothing past it.

Aircraft numbers

- More ASW aircraft means higher DR.

Another obvious one. Even a single ASW AC will find subs. Patrol levels, lost or unserviceable aircraft and number of pilots can all affect the numbers flying.

Setting 100% ASW level cripples an air group very quickly. Running at that rate for 6-7 turns can reduce a 12 strong AG to roughly half, carry on for 14 turns and you can expect to have only one often none available. Beware unserviceability.

I found 60% for continual use works, higher if you expect trouble and only run at 100% if you know where, when and from roughly what direction.

Weather

- Bad weather reduces DR

Seems to affect ASW more than NavS.

What I didn't see

- Automatic detection.
- Flying any mission other than ASW find nothing.