

## Economic Primer, 1<sup>st</sup> Turn and onward Set Up For Japan – GC Scenario 1.

Logistics – Are the key to fighting this war, getting the economy on track from Turn 1 or 2 is vitally important. Once the economy is setup, it can remove many of the growing pains in later months. Setting this up can be simple or difficult with a myriad of differing options. I offer this as a simple view of what to do in the early days and tweaking this can be done at your leisure. This is just one view, others are likely to disagree and tangle the arguments and if I did anything glaring by mistake let me know and I'll change this paper. I offer this not as an advanced class, rather to help people interested in playing the Japanese; get on track.

It will start with an economic primer and then examine the macro and micro aspects of the witp-ae economic system. Furthermore, it will then go into the specifics of turn 1 and a checklist for those not willing to read this over-inflated document.

You might also want to check out some tutorials I made: (pre-beta)

<http://sites.google.com/site/n01487477/Home?pli=1>

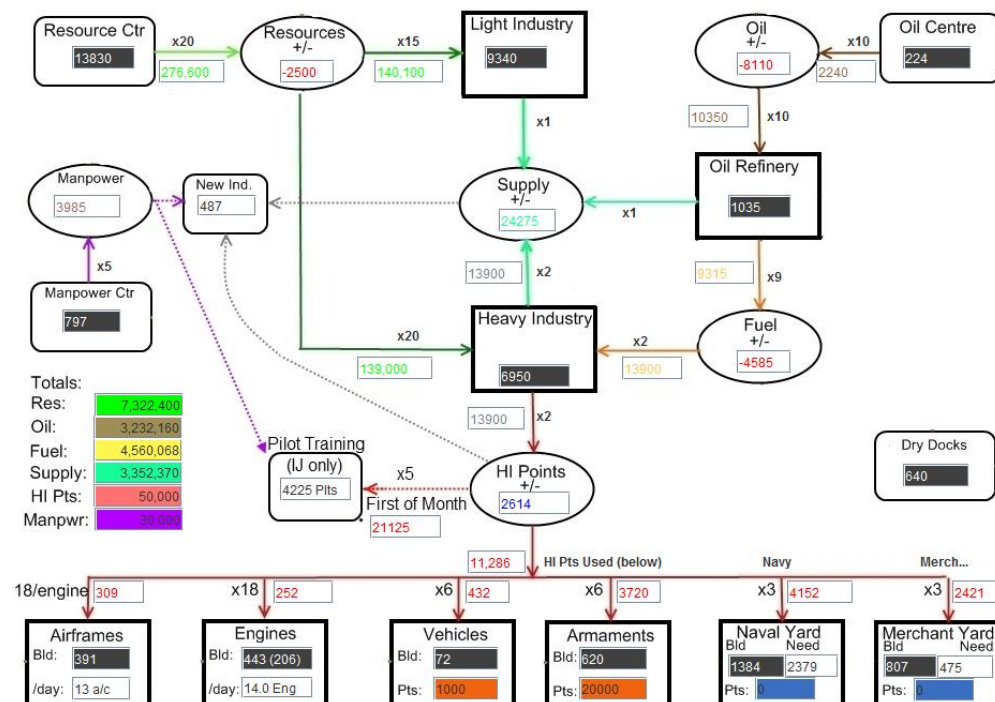
And get Tracker up and running.

<http://sites.google.com/site/witptracker/releases>

### The Economy – an overview.

A distinction should be made first off between the whole Japanese Empire economy and the Japanese Home Land economy including Hokkaido and Sakhalin; which are not connected. As they are not connected, the flow of raw materials needs to be understood, which I'll outline later.

Looking first at the Empire economy, it is important to point out is that all final manufactures (planes, engines, vehicle, arms, naval & merchant) are made at the macro level. So for instance, a plane factory in Manchuria, without a HI or engine factory in the same city doesn't have to worry. HI points and engines(in this case) are global. Whereas, fuel and supplies need to be processed at bases, with the raw materials and the complementary factory on hand. Also, it is important to point out that some raw materials won't be produced in areas while being contested. The Empire economy is best seen using the Tracker chart, but can be worked out without this aid by taking the numbers from in game.



### Understanding the Economic Cycle (new players)

Our two main basic raw materials are Resources and Oil. Resources are made at Resource Centres(RC) with a multiplier of 20. So, 1 RC produces 20 Resources per turn. Oil is produced at Oil

Centres(OC) with a multiplier of 10. 1 OC produces 10 Oil per turn. Oil is then converted into Fuel and Supply at Oil Refineries(OR). The Oil needs to be at a base with an OR to be converted. The ratio for inputs is 10:1. 10 Oil will be needed per “OR factory”, this will produce 9 fuel and 1 supply.

Before I continue, I must say that it is important for new players to understand that there are no half measures. For instance, if your Oil at Base = 100 and the OR size = 100 nothing will be produced. The size 100 OR needs 1000 Oil; it will not take the 100 and produce 90 fuel and 10 supply. This goes the same for HI and LI. Hence the need to be vigil about keeping the Industries supplied with their respective raw material needs.

Resources are used by Light Industry (LI) and Heavy Industry (HI). Once again a reminder, these Resources must be at the Base for the Industries to produce. They are not global. LI only uses Resources to produce supplies at a multiplier of 15:1. So, 15 Resources produce 1 supply. Resources are also used by HI factories at a rate of 20 Resources per HI. Apart from Resources, HI also uses fuel at a 2:1 ratio. So for a HI centre to operate it needs 20 Resources & 2 Fuel to produce 2 HI points and 2 supplies.

Now looking at the outputs, and although HI is an output it is an input too. HI is used to create airframes, engines and provide points for Vehicle, Armament, Naval & Merchant shipbuilding. Let's look at them one at a time (**only** HI points are used to create these):

1. Airframes – HI points are used at a rate of 18 per engine. This applies only to planes that are available and have factories which are building. R&D factories don't have any associated HI cost, but need supplies to repair.

-1 engine plane will cost (18 HI \*1) + 1 engine (another 18 HI) = 36

-2 engine plane will cost (18 HI \*2) + 2 engines (another 36 HI) =72

2. Engines – HI points are used at a rate of 18 per engine. R&D factories don't have any associated HI cost, but need supplies to repair.

3. Vehicles – 6 HI points are used to create 1 Veh point. I could go into the maths of what this mean for production. But this is a simplistic overview.

4. Armament - 6 HI points are used to create 1 Arm point. Once again, this is a simplistic overview.

5. Naval Shipyards – 3 HI points are used to create 1 naval point. This one point is equivalent to building a durability 1 ship for one day.

6. Merchant Shipyards – 3 HI points are used to create 1 merchant point. Same as above.

## **The Economic Sit Rep**

### **Macro**

First thing to note is that while the economy isn't in a shambles, but it isn't great either. The overall Totals of Raw materials (Res, Oil, Fuel & Supply) are good, HI is low. But as you will see later these Empire totals are not so important at present, rather the raw materials in our manufacturing centres in the Home Lands are more so.

According to the chart Japan starts with 13830 RC, producing 267,600 Resources per turn. The Empire has 9340 LI, using 140,100 Resources to produce 9340 supplies per turn. HI uses 20 Resources per HI. There are 6950 “HI factories” so this equals 139,000 Resource usage per turn. Overall this represents a shortfall of 2500 Resources per turn. Japan also starts the scenario with 224 OC's, producing 2240 Oil per turn. 1035 OR needing 10350 Oil creating a shortfall of 8110. HI fuel needs outstrip fuel production by 4585. Lastly, HI points are about 2514 per turn, depending on LCU arrivals, reinforcements, expansions to Industry and airframe production. This is good, but not all that we can do or be!

In summary, we can see by our inputs that we are lacking in Resource & Oil Centres and also Oil Refining capability. While this seems important, it is not so important in the short term. In the long term, these numbers will cause the economy to crash without the capture of the vital resource rich areas in the SRA (Malaya, Borneo etc). Anyway, these numbers are just an indicator, as to the state of our economy, not what will happen exactly. A closer look at the Micro situation might help in that regard ...

## Micro

This section will look at Regional and a quick overview of Base requirements of raw materials and their associated use. Japan excluding Sakhalin and Hokkaido needs 79,100 Resources a day above what it creates to remain Resource stable. It is very important to note that Hokkaido is not connected to the mainland of Japan (Honshu, Shikoku & Kyushu). Understanding this means that you will realise that raw materials don't move between the two and hence convoying is necessary. Later, I'll be discussing the most efficient way to set this up using CS convoys. If you don't know how to use them have a look at my video tutes.

At present there are about 60 days supply of Resources, but once you get low (around 20-30 days) you'll find HI and LI failing even though there is enough overall. This has to do with the movement of Resources around Japan. Once again Japan also has about a year's supply of Oil for its Refineries and just over 200 days of fuel. But remember this is just the HI needs, not including shipping requirements. This is why we need to use and build efficient ships for the task.

Back to Resources, so where is Japan going to get these Resources from? See the table below. Look at the Diff/Day column and you could count up a positive of 77,100 and negative of 79,600 = 2500. This is what I stated in the Macro section. Apart from that, Resources are also in storage in these places and it will be our job to move them to Japan. I won't go through Oil at this stage as it's nothing to worry about in the short term. But, importing a little (150/d) from Hokkaido and (300/d) from Sakhalin and not taking any from Manchuria or Korea is important enough to note here.

| L... | Region/Dest     | Oil Stored | Oil Produc... | Oil Use | Diff/Day | Oil +/- days | Shipping | Res Sto... | Res Produc... | Res Use | Diff/Day | Res +/- days | Shipping |
|------|-----------------|------------|---------------|---------|----------|--------------|----------|------------|---------------|---------|----------|--------------|----------|
| 1    | Japan           | 2,795,410  | 1110          | 8950    | -7840    | 357 days     | 0        | 5,080,800  | 157800        | 236,900 | -79100   | 60 days      | 0        |
| 9    | Manchukuo       | 347,210    | 550           | 1200    | -650     | 535 days     | 0        | 619,200    | 29600         | 13,700  | 15900    | inf.         | 0        |
| 2    | Hokkaido        | 9,720      | 150           | 0       | 150      | inf.         | 0        | 580,800    | 40000         | 5,400   | 34600    | inf.         | 0        |
| 7    | Korea           | 3,240      | 50            | 0       | 50       | inf.         | 0        | 352,800    | 13800         | 9,200   | 4600     | inf.         | 0        |
| 49   | China           | 0          | 0             | 0       | 0        | inf.         | 0        | 331,200    | 13200         | 8,800   | 4400     | inf.         | 0        |
| 4    | Sakhalin        | 19,470     | 300           | 0       | 300      | inf.         | 0        | 134,400    | 10400         | 600     | 9800     | inf.         | 0        |
| 12   | Indochina       | 0          | 0             | 0       | 0        | inf.         | 0        | 96,000     | 6000          | 1,300   | 4700     | inf.         | 0        |
| 8    | Formosa         | 5,190      | 80            | 0       | 80       | inf.         | 0        | 60,000     | 3400          | 1,200   | 2200     | inf.         | 0        |
| 13   | Thailand        | 51,920     | 0             | 200     | -200     | 259 days     | 0        | 48,000     | 1200          | 1,700   | -500     | 89 days      | 0        |
| 3    | Japanese I...   | 0          | 0             | 0       | 0        | inf.         | 0        | 9,600      | 400           | 300     | 100      | inf.         | 0        |
| 5    | Ryukyu Isla...  | 0          | 0             | 0       | 0        | inf.         | 0        | 9,600      | 800           | 0       | 800      | inf.         | 0        |
| 6    | Kurile Islan... | 0          | 0             | 0       | 0        | inf.         | 0        | 0          | 0             | 0       | 0        | inf.         | 0        |
| 11   | Hainan          | 0          | 0             | 0       | 0        | inf.         | 0        | 0          | 0             | 0       | 0        | inf.         | 0        |
| 14   | Mariana Isl...  | 0          | 0             | 0       | 0        | inf.         | 0        | 0          | 0             | 0       | 0        | inf.         | 0        |
| 15   | Caroline Isl... | 0          | 0             | 0       | 0        | inf.         | 0        | 0          | 0             | 0       | 0        | inf.         | 0        |
| 16   | Marshall Isl... | 0          | 0             | 0       | 0        | inf.         | 0        | 0          | 0             | 0       | 0        | inf.         | 0        |
| 1    | TF              | 0          | 0             | 0       | 0        | inf.         | 0        | 0          | 0             | 0       | 0        | inf.         | 0        |

The table below looks at the supply and fuel situation. I won't go into supplies, but the fuel situation is serious enough for further consideration. While we have 211 days of fuel – shipping needs, the real issue is that within the first 100 days, 408,500 will be used by industry. We cannot take any fuel from our current Empire as basically everything is in decline in all areas except Thailand. (I'm grouping Korea, Manchuria and China together here)

| L... | Region/Dest     | Supply Stored | Supply Requ... | S.TotalRep... | S.Use/need  | Supply Prod. | Shipping | Fuel Stored | Fuel Prod. | HI_FuelNeed | Diff/day | +/- days  | Shipping |
|------|-----------------|---------------|----------------|---------------|-------------|--------------|----------|-------------|------------|-------------|----------|-----------|----------|
| 1    | Japan           | 1,308,942     | 27,343         | 964000        | 60000/98000 | 20735        | 0        | 2,563,400   | 8055       | 12140       | -4085    | 211 Days  | 0        |
| ...  | China           | 311,690       | 40,121         | 0             | 0/0         | 720          | 0        | 671,200     | 0          | 400         | -400     | 1678 Days | 0        |
| ...  | Indochina       | 192,254       | 19,087         | 0             | 0/0         | 100          | 0        | 357,300     | 0          | 40          | -40      | 8932 Days | 0        |
| ...  | Caroline Isl... | 164,927       | 4,467          | 0             | 0/0         | 0            | 12,442   | 251,350     | 0          | 0           | 0        | 0         | 0        |
| 9    | Manchukuo       | 307,760       | 35,033         | 30000         | 1000/1000   | 1220         | 0        | 146,400     | 1080       | 560         | 520      | 0         | 0        |
| 7    | Korea           | 49,250        | 4,967          | 0             | 0/0         | 780          | 0        | 116,800     | 0          | 500         | -500     | 233 Days  | 0        |
| 8    | Formosa         | 204,216       | 16,584         | 0             | 0/0         | 80           | 0        | 103,500     | 0          | 0           | 0        | 0         | 0        |
| 2    | Hokkaido        | 69,440        | 1,632          | 0             | 0/0         | 420          | 0        | 70,200      | 0          | 180         | -180     | 390 Days  | 0        |
| ...  | TF              | 438,778       | 0              | 0             | 0/0         | 0            | 0        | 66,962      | 0          | 0           | 0        | 0         | 0        |
| 5    | Ryukyu Isla...  | 26,203        | 1,170          | 0             | 0/0         | 0            | 0        | 56,000      | 0          | 0           | 0        | 0         | 0        |
| ...  | Thailand        | 26,990        | 3,890          | 0             | 0/0         | 160          | 150,472  | 38,900      | 180        | 80          | 100      | 0         | 6300     |
| ...  | Hainan          | 30,003        | 6,415          | 0             | 0/0         | 0            | 0        | 35,100      | 0          | 0           | 0        | 0         | 0        |
| 4    | Sakhalin        | 24,140        | 615            | 0             | 0/0         | 40           | 0        | 32,900      | 0          | 0           | 0        | 0         | 0        |
| ...  | Marshall Isl... | 44,151        | 3,704          | 0             | 0/0         | 0            | 5,079    | 27,500      | 0          | 0           | 0        | 0         | 0        |
| 6    | Kurile Islan... | 5,750         | 149            | 0             | 0/0         | 0            | 0        | 9,500       | 0          | 0           | 0        | 0         | 0        |
| ...  | Mariana Isl...  | 38,840        | 853            | 0             | 0/0         | 0            | 4,715    | 9,500       | 0          | 0           | 0        | 0         | 0        |
| 3    | Japanese I...   | 68,115        | 1,319          | 0             | 0/0         | 20           | 0        | 1,000       | 0          | 0           | 0        | 0         | 0        |

As for bases and where Resources stockpile, it depends on the beta version or official patch. I'm using the latest and greatest, but most Japanese players know that Resources are drawn to (Hokkaido)Sapporo, Hakkodate, Kushiro || (Manchuria)Port Arthur || (Korea)Keijo, Fusan ||(China) Shanghai and later Hong Kong. Both bases on Sakhalin get them too. So in summary, we'll be

looking at these Ports closer for our convoys to Japan. Tokyo and Osaka have the greatest requirement due to their large HI and LI factories, but not to worry dropping Resources anywhere on the 3 main Islands will eventually filter them to where they're needed.

### Overall and 1<sup>st</sup> Turn Aims:

My aim is two fold, firstly to reduce HI needs and secondly to make sure the efficient running of the economy accounting for inputs and outputs. In this section, I'll tell you the procedure for getting it sorted.

#### Game Mechanics of note:

- Each base needs >10K supplies to repair damaged industry. And each industry point repair costs 1000 supply.
- Increasing a factory costs 100 Supply (at the base), 10 HI & 10 Manpower.
- Supply Req is important to understand so that the first two mechanics work properly. Under the beta and 1106i it is different, so be careful. Simply put, under the beta it increases by x3. So a req of 4K will approx. give  $4k \times 3 = 12,000$ . But understand that I'm putting this simply as a yardstick. Increasing supplies to the bases can be done from the Industry panel or from the base screen. Clicking Nagoya will bring up the base, then increase the supply req. +4K ~ 5K
- Stockpiling is important to understand for Res allocation (beta only).

#### 1. Macro

- a. Armaments – turn off (halt) 240. This is a good starting point but will have to be monitored depending on your battles, victories and losses. Additional factories

| Base              | Type              | Upgd | Repair | Prod | Size - producing  |
|-------------------|-------------------|------|--------|------|-------------------|
| Okayama           | Armament Assembly | -    | Yes    | Yes  | 5(0) - 5 Guns     |
| Kanazawa          | Armament Assembly | -    | Yes    | Yes  | 10(0) - 10 Guns   |
| Maebashi          | Armament Assembly | -    | Yes    | Yes  | 15(0) - 15 Guns   |
| Hiroshima/Kure    | Armament Assembly | -    | Yes    | Yes  | 20(0) - 20 Guns   |
| Kobe              | Armament Assembly | -    | Yes    | Yes  | 20(0) - 20 Guns   |
| Nagasaki/Sasebo   | Armament Assembly | -    | Yes    | Yes  | 30(0) - 30 Guns   |
| Yokohama/Yokosuka | Armament Assembly | -    | Yes    | Yes  | 50(0) - 50 Guns   |
| Nagoya            | Armament Assembly | -    | Yes    | No   | 80(0) - 80 Guns   |
| Keijo             | Armament Assembly | -    | Yes    | No   | 80(0) - 80 Guns   |
| Mukden            | Armament Assembly | -    | Yes    | No   | 80(0) - 80 Guns   |
| Fukuoka           | Armament Assembly | -    | Yes    | Yes  | 90(0) - 90 Guns   |
| Tokyo             | Armament Assembly | -    | Yes    | Yes  | 140(0) - 140 Guns |

might be turned off once you have a good stockpile. This 240 Halted =  $240 \times 6$  or 1440 HI saved.

- b. Vehicles - expand to 40 each. I usually go with 40, because I'm aggressive. On the first turn you might/will find that you can't expand some factories because there are not enough supplies at base to cover the initial expansion. Remember to increase your supply req. at each base to 4k+ to ensure that they are built and on the second turn get them all to 40. Do this, rather than creating one big factory means that they will repair faster and be online for your use. This represents  $6 \times 40 = 240 \times 6 = 1440$  HI. So my HI savings overall are  $1440(\text{arm}) - (1440(\text{veh}) - 432) = 1008$  HI points .

| Base              | Type             | Upgd | Repair | Prod | Size - producing | Failed | Fuel | Res | Oil |
|-------------------|------------------|------|--------|------|------------------|--------|------|-----|-----|
| Hiroshima/Kure    | Vehicle Assembly | -    | Yes    | Yes  | 12(18) - 12 Veh  | -      | 0    | 0   | 0   |
| Kanazawa          | Vehicle Assembly | -    | Yes    | Yes  | 2(28) - 2 Veh    | -      | 0    | 0   | 0   |
| Kobe              | Vehicle Assembly | -    | Yes    | Yes  | 7(23) - 7 Veh    | -      | 0    | 0   | 0   |
| Maizuru           | Vehicle Assembly | -    | Yes    | Yes  | 25(5) - 25 Veh   | -      | 0    | 0   | 0   |
| Osaka/Kyoto       | Vehicle Assembly | -    | Yes    | Yes  | 16(14) - 16 Veh  | -      | 0    | 0   | 0   |
| Yokohama/Yokosuka | Vehicle Assembly | -    | Yes    | Yes  | 10(20) - 10 Veh  | -      | 0    | 0   | 0   |

- c. Naval Shipyards – I tend to increase by about 100. Although in truth you can leave it alone. I do it because I have a strong wish to build quickly. Under the beta

the ship production interface allows you to stop every ship now. So its time to think clearly about what you'd like. I'll talk about this later in the micro section.

- d. Merchant Shipyards – With the view that I have almost enough merchant class ships to take on the Allies from the get-go. I'm looking to cut back on my merchant build (micro section) I turn off about 300 Merchant SY. Although an alternative approach is to accumulate some points for a month or so and then turn off the excess. You should be looking to rationalise the merchant build – I recommend building what is already in build status, then only building or accelerating TK/AO's/large AP/AK and others that you want to convert. See micro section for more info.
- e. Engines – see micro because they rely on airframe production.
- f. Airframes are micro (see section)

## Micro section

There is a tendency for new players to overexpand industry, sucking up too many supplies; so be mindful not to do that.

## Supplies allocation

I go through all the bases on Japan with Industry and increase the supply req. to 4K~5K to give me at least 10K supplies at these bases from turn 2. I usually do this from the Industry screen filtering on R&D, aircraft and Vehicles.

Alfred's excellent thread on Econ issues pertaining to supplies and other tid-bits

<http://www.matrixgames.com/forums/tm.asp?m=2878790>

## Convoy Musings

**To get your convoys setup correctly it is going to take about 2 weeks of game time to get it right.**

To get my Convoy system up and running efficiently, I consider the following:

1. Where Resources are pooling (already touched upon briefly)
2. Regional raw material creation.
3. Port Load and Port Ship Load capability.
4. Ship Cargo size (and Cargo & Fuel Eff.)

and do:

1. Move Engineers to max targeted port sizes.
2. Match up Port Ship Load & Ship Cargo capacity.
3. I also consider distance and speed, where longer voyages need faster cargo ships, whereas smaller hops do not.
4. Move ships to starting locations.

## Regional Resource Production

If you remember earlier I stated that at the beginning of the GC, the Empire was experiencing a shortfall of 2500 Resources per turn. That Japan needs 79,600 Res / day (RUse-RProd) and there are 77,100 Res being produced every day external to Japan(3 main Islands). Which equals -2500/d. Importantly, as these Resources are not being produced in Japan, we need to convoy them in at this rate (79.6K/d) to keep the economy running. Without sufficient Resources and fuel, the economy will crash. Additionally, while this is less than what is required to sustain the industry in Japan and the Empire at large; there's nothing to worry about for around 700 days - Empire wide. And we'll be going to war – right?

Luckily, we start the war with huge stockpiles of Resources in Korea, Manchuria, China (KMC), Hokkaido and to a lesser extent Sakhalin. So, we'll be hauling this surplus from these regions in the beginning to create a Res buffer in Japan.

| Region    | Res Stored | Prod   | used  | Diff  |
|-----------|------------|--------|-------|-------|
| Korea     | 352800     | 13800  | 9200  | 4600  |
| China     | 331200     | 13200  | 8800  | 4400  |
| Manchukuo | 619200     | 29600  | 13700 | 15900 |
|           |            |        |       |       |
| Region    | Res Stored | Prod   | used  | Diff  |
| Hokkaido  | 580800     | 40000  | 5400  | 34600 |
| Sakhalin  | 134400     | 10400  | 600   | 9800  |
| KMC       | 1303200    | 56600  | 31700 | 24900 |
| Totals    | 2018400    | 107000 | 37700 | 69300 |

On this point, the convoy system I'm getting you to set up will haul excess Resources into Japan each day. It's a good starting point, your fun in the future is to manage, expand it and in some cases reduce it to reflect surpluses ...

Eventually, you'll have to change your convoys when there is no longer a surplus to reflect the production in these areas.

Some suggestions about this include:-

1. After maxing some Ports on Sakhalin and Hokkaido, set your Sakhalin convoys to go to Hokkaido(Wakkanai) and pick up after they've filtered down to Hakodate.
2. Use smaller TK from Palembang, Medan & maybe Miri to Singapore (hub); Larger TK's from there to Japan. Or capture a route across China and see if the Oil/Fuel/Res Flow across.(I've not tested this but some players swear it works)

### **Resource Storage and flows.**

All raw materials flow across the map and pool at different locations according to a number of factors. I might fill this section in more, but basically as long as you control the hexes between bases these raw materials will flow. They pool at bases which have Raw material need (Industry) & larger port sizes. Obviously, getting the resources closer to Japan for transport purposes is to be desired; as you'll use less fuel (shipping) getting them etc.

From testing and tweaking you can manipulate this pooling by building up certain ports and using the Resource Storage button on the base screen. I turn on Resource Storage at Keijo, Fusan, Sapporo and ShangHai, build up Ports at Keijo (not max) and Fusan(max\_size). After Fusan is built up I turn off resource storage at Keijo. Also pay attention to load rates which are not just affected by Port size but by the raw materials produced there.

### **Port Load / Offload**

Learning about the load / offload capacities of Ports, allows you to understand how to set up your convoy system efficiently. Primarily Port size & **raw material centres** affect the amount that might be loaded. Offload however is not affected by the raw material centres present and it reverts back to the normal Port offload rate. Also, Naval Support doesn't affect this rate pertaining to res, oil and fuel; only supply and troops. The formula below is for docked Tf's, Tf's that cannot dock have less ability to load and a smaller port load value is assigned.

The formula for Resources (RC):

Ship load =  $(RC * multiplier (20)) + ((Port Size * 200) * 2)$

Port load =  $(RC * multiplier (20)) + Port Size load rate$

**\*\*Fuel and Oil are similar but are affected by Oil Refinery or Oil Centres at an increased rate(500).**

The formula for Oil/Fuel ():

Ship load =  $(OilC \text{ or } OilRef * multiplier (10 \text{ or } 9)) + ((Port Size * 500) * 2)$

Port load =  $(OilC \text{ or } OilRef * multiplier (10 \text{ or } 9)) + Port Size load rate$

An interesting thing with Oil C and Oil Ref is that the Daily max Fuel/Oil (Port Load) that can be loaded from the port is predicated by the larger of the two. Therefore having both Refineries and Oil Centres present will not increase the port load by adding both together. Rather the larger of the two will determine the port load for both.

For example (and tested).

|                    | Oil C | Ref | Load Oil / Fuel                                                                            | Port Load                                      |
|--------------------|-------|-----|--------------------------------------------------------------------------------------------|------------------------------------------------|
| Port A<br>(Size 6) | 300   | 100 | Oil = $9000 = (300 * 10) + ((6 * 500) * 2)$<br>Fuel = $6900 = (100 * 9) + ((6 * 500) * 2)$ | $30500 = (300 * 10) + 27500$ (pp.125-6 manual) |
| Port B             | 100   | 300 | Oil = $7000 = (100 * 10) + ((6 * 500) * 2)$<br>Fuel = $8700 = (300 * 9) + ((6 * 500) * 2)$ | $30200 = (300 * 9) + 27500$ (pp.125-6 manual)  |

Therefore, the Port load (max) is determined by the larger of the two, not a combination.

So, the things to take note of are:

1. Port Ship load rates or the amount of raw materials a ship can load in one day.
2. Total Port load rates, the total amount that can be loaded by a Port onto a TF or multiple TF's at the Port each day.

So looking at the Table below you can see:

For example, At Kushiro, each ship can load a max of 18.4K/d, but a TF can only load a PortMax of 28.45K/d. So it is limited by this as well as a TF Docking limit of 24K Tonnage. So we basically need to look for the limiting factor, which in this case is TF docking and determine our TF composition from this. As TF docking size is our major constraint here, I recommend increasing the PortSize to facilitate larger TF's. As you can see by the chart, building to Max will allow TF's of 60K Tonnage. This also will increase shipload and Port load too.

| LOADING PORTS |        |           |            |           |               |           |         |                            |           |           |               |               |             |
|---------------|--------|-----------|------------|-----------|---------------|-----------|---------|----------------------------|-----------|-----------|---------------|---------------|-------------|
| Port name     | Hex    | Area      | Resource s | Port size | Std Port size | Ship dock | TF Dock | Max cargo handling in tons | Ship load | Port load | Max port size | Max Ship dock | Max TF dock |
| Kushiro       | 123,53 | Hokkaido  | 860        | 3         | 2             | 12,000    | 24,000  | 11,250                     | 18,400    | 28,450    | 5             | 36,000        | 60,000      |
| Sapporo       | 120,51 | Hokkaido  | 900        | 5         | 6             | 36,000    | 60,000  | 33,000                     | 20,000    | 51,000    | 9             | 78,000        | 172,000     |
| Hakodate      | 120,52 | Hokkaido  | 80         | 6         | 4             | 48,000    | 84,000  | 54,500                     | 4,000     | 56,100    | 7             | 60,000        | 104,000     |
| Muroran       | 120,52 | Hokkaido  | 60         | 3         | 4             | 12,000    | 24,000  | 11,250                     | 2,400     | 12,450    | 7             | 60,000        | 104,000     |
| Shikuka       | 126,43 | Sakhalin  | 0          | 4         | 6             | 24,000    | 48,000  | 18,750                     | 1,600     | 18,750    | 9             | 78,000        | 172,000     |
| Togohara      | 124,46 | Sakhalin  | 520        | 3         | 1             | 12,000    | 24,000  | 11,250                     | 11,600    | 21,650    | 4             | 24,000        | 48,000      |
| Fusan         | 103,55 | Korea     | 20         | 4         | 5             | 24,000    | 48,000  | 18,750                     | 2,000     | 19,150    | 8             | 72,000        | 128,000     |
| Keijo         | 103,50 | Korea     | 280        | 4         | 3             | 24,000    | 48,000  | 18,750                     | 7,200     | 24,350    | 6             | 48,000        | 84,000      |
| Shanghai      | 92,55  | China     | 20         | 7         | 7             | 60,000    | 104,000 | 72,800                     | 3,200     | 73,200    | 9             | 78,000        | 172,000     |
| Port Arthur   | 93,44  | Manchukuo | 20         | 9         | 9             | 78,000    | 172,000 | 150,500                    | 4,000     | 150,900   | 9             | 78,000        | 172,000     |

| OFFLOAD PORTS |        |       |            |           |               |           |         |                            |             |             |               |               |             |
|---------------|--------|-------|------------|-----------|---------------|-----------|---------|----------------------------|-------------|-------------|---------------|---------------|-------------|
| Port name     | Hex    | Area  | Resource s | Port size | Std Port size | Ship dock | TF Dock | Max cargo handling in tons | Ship Unload | Port Unload | Max port size | Max Ship dock | Max TF dock |
| Iwaki         | 116,53 | Japan | 640        | 3         | 1             | 12,000    | 24,000  | 11,250                     | 14,000      | 24,050      | 4             | 24,000        | 48,000      |
| Sendai        | 117,58 | Japan | 80         | 3         | 5             | 12,000    | 24,000  | 11,250                     | 2,800       | 12,850      | 8             | 72,000        | 128,000     |
| Hirosaki/Aom  | 118,54 | Japan | 80         | 5         | 3             | 36,000    | 60,000  | 33,000                     | 3,600       | 34,600      | 6             | 48,000        | 84,000      |
| Ominato       | 119,54 | Japan | 60         | 5         | 6             | 36,000    | 60,000  | 33,000                     | 3,200       | 34,200      | 9             | 78,000        | 172,000     |
| Nigata        | 114,57 | Japan | 80         | 5         | 4             | 36,000    | 60,000  | 33,000                     | 3,600       | 34,600      | 7             | 60,000        | 104,000     |
| Shimonoski    | 104,57 | Japan | 900        | 9         | 6             | 78,000    | 172,000 | 150,500                    | 21,600      | 168,500     | 9             | 78,000        | 172,000     |
| Fukuoka       | 103,57 | Japan | 940        | 10        | 7             | 84,000    | 196,000 | 176,000                    | 22,800      | 194,800     | 10            | 84,000        | 196,000     |
| NagSasebo     | 102,58 | Japan | 920        | 7         | 6             | 60,000    | 104,000 | 72,800                     | 21,200      | 91,200      | 9             | 78,000        | 172,000     |
| Tokyo         | 114,60 | Japan | 280        | 10        | 9             | 84,000    | 196,000 | 176,000                    | 9,600       | 181,600     | 10            | 84,000        | 196,000     |
| Yokohama      | 113,61 | Japan | 160        | 7         | 6             | 60,000    | 104,000 | 72,800                     | 6,000       | 76,000      | 9             | 78,000        | 172,000     |

So, Bases in yellow I recommend increasing the Port size, others can follow. I usually upgrade Keijo to a 5, but not max as I want to get Resources to pool in Fusan.

Maximising some ports to facilitate your convoy system is important to do early on. The others you can do at your leisure or not.. To do this you'll need to look at the next section.

## Engineer movement

To increase these Port facilities, you'll need to turn on expansions to the ports at these bases and sent engineers to them to facilitate that. Some will need to be strategically moved and others might need to be moved via amphib from other places.

There are construction engineering units dotted around the map, some in Manchuria and Korea, 3 or 4 in Japan and I'm not adverse to taking some of the construction engineers out of Formosa and getting them working early.

## Assigning Shipping for Cargo Hauling

Having seen which Ports we wish to maximise and looked at the max constraint on Ports (size, load times), it is time to marry comparable ships to these ports; for efficient TF routing. To do this we need to consider:

- a. Ship Speed and Endurance.
- b. Ship Tonnage & Cargo

The chart below summarises the main information, but this can be obtained from Tracker 1.9 (when released). A note on the calculated fields (blue) is that some of this is not a constant and different variables impact on giving 100% accurate readings. Therefore this should be taken as an average.

\*\* I've tried to show best practice here, but realistically having a 2 day load for some convoy's is not a great reduction in efficiency especially for long haul routes, but being able to dock is.

| Name          | Type | Ships(delay) | Max | Cruise | Hex/day | Endurance | Fuel | Range(Hex) | Fuel/Hex | Fuel/Day | Cargo Eff. | Tonnage | Troop | Cargo | Liquid | Converts To     |
|---------------|------|--------------|-----|--------|---------|-----------|------|------------|----------|----------|------------|---------|-------|-------|--------|-----------------|
| To'su Cargo   | xAKL | 37 (1)       | 10  | 8      | 5       | 2100      | 91   | 52         | 1.75     | 8        | 35,307     | 215     | 0     | 170   | 0      | CMc,Amc,ACM,PB  |
| Kiso-E Cargo  | xAKL | 69 (0)       | 11  | 8      | 5       | 4000      | 213  | 100        | 2.13     | 10       | 141,830    | 830     | 0     | 795   | 0      | ACM,PB,Amc,AG   |
| Daigen Cargo  | xAKL | 68 (0)       | 10  | 8      | 5       | 4500      | 257  | 112        | 2.29     | 11       | 247,412    | 1650    | 125   | 1570  | 0      | AG              |
| Kasu-D Cargo  | xAKL | 46 (0)       | 12  | 10     | 6       | 4000      | 229  | 100        | 2.29     | 13       | 331,441    | 1900    | 140   | 1725  | 0      | AG              |
| Miyati Cargo  | xAKL | 59 (1)       | 10  | 8      | 5       | 4000      | 286  | 100        | 2.86     | 14       | 255,146    | 2050    | 160   | 2027  | 0      | AG, AGP         |
| Gozan Cargo   | xAK  | 58 (3)       | 10  | 8      | 5       | 9600      | 696  | 240        | 2.9      | 14       | 286,758    | 2375    | 185   | 2310  | 0      | AG,AGP          |
| Ansyu-C Cargo | xAK  | 54 (0)       | 14  | 12     | 7       | 6000      | 715  | 150        | 4.77     | 33       | 327,381    | 2980    | 240   | 3001  | 0      | PB,AKE          |
| Std-C Cargo   | xAK  | 17 (56)      | 12  | 10     | 6       | 5800      | 570  | 145        | 3.93     | 23       | 335,901    | 2900    | 240   | 3001  | 0      | AKE,TK          |
| Toho Cargo    | xAK  | 53 (2)       | 14  | 11     | 7       | 8900      | 1085 | 222        | 4.89     | 34       | 361,434    | 3675    | 280   | 3525  | 0      | AKE             |
| Ehime Cargo   | xAK  | 58 (0)       | 12  | 10     | 6       | 10000     | 1136 | 250        | 4.54     | 27       | 346,170    | 3425    | 285   | 3575  | 0      | AKE,AD,AG       |
| Akasi Cargo   | xAK  | 57 (1)       | 12  | 10     | 6       | 10200     | 1085 | 255        | 4.25     | 25       | 387,788    | 3675    | 300   | 3750  | 0      | AKE,AD          |
| Husimi Cargo  | xAK  | 25 (0)       | 14  | 11     | 7       | 11250     | 1350 | 281        | 4.8      | 33       | 460,416    | 4675    | 350   | 4420  | 0      | AK,AS,AV,AR,AKE |
| Aden Cargo    | xAK  | 189 (0)      | 12  | 10     | 6       | 9400      | 1146 | 235        | 4.88     | 29       | 421,359    | 4875    | 370   | 4670  | 0      | AKV,AKE         |
| Kyushu Cargo  | xAK  | 32 (0)       | 18  | 14     | 9       | 16600     | 1395 | 415        | 3.36     | 30       | 1,087,532  | 5935    | 430   | 5412  | 300    | AK,AS,AV,AR,AKE |
| Yusen N Cargo | xAK  | 57 (0)       | 15  | 13     | 8       | 13000     | 1780 | 325        | 5.48     | 43       | 623,196    | 6400    | 460   | 5795  | 300    | AK,AKE          |
| Yusen A Cargo | xAK  | 7 (0)        | 18  | 14     | 9       | 13500     | 1956 | 337        | 5.8      | 52       | 663,681    | 6825    | 480   | 6010  | 0      | None            |
| Lima Cargo    | xAK  | 46 (0)       | 14  | 11     | 7       | 12000     | 1560 | 300        | 5.2      | 36       | 588,942    | 6475    | 490   | 6125  | 0      | AKV,AKE         |
| Yusen S Cargo | AK   | 10 (0)       | 18  | 14     | 9       | 18500     | 1650 | 462        | 3.57     | 32       | 1,144,533  | 6840    | 510   | 6380  | 0      | None            |

For the purposes of this chart the yellow are ships that convert to PB, the Ansyu has a better speed here and the 'orange-brown' are ship classes that I feel are valuable for other duties such as AR and AKE. Obviously, you will not convert all of these. The Yusen S cargo is the best ship class for hauling you have. There are only 10, use them wisely. I'd even think about changing the first turn TF's with these ships heading into dangerous waters. Additionally, the Kyushu and Yusen-N class ships were deemed inappropriate for some routes as I didn't want the CS system to pick up Oil.

While I've included just available shipClasses at 7/12/41 (dd/mm/yy), "Sulu Sea" also made a valid point that the navalized AK is available as an upgrade for that class on 12/41.

#### **a. Ship Speed and Endurance**

While Port size and load limits are important; more so for smaller routes, longer distance routes often benefit from larger hex movement/d (speed) & increased capacity. Also, TF's move at the slowest speed ship in the TF. Endurance & fuel use for ships which are faster than the slowest ship do not use as much fuel as they would at their max hex movement for the day.

## 1. Endurance & (Range(Hex))

Endurance is a measure of miles that the ship is able to travel before replenishing.

At mission speed this endurance in Hexes is:

$$\text{Hexes} = \text{Endurance} / 40$$

At max speed this endurance in Hexes is:

$$\text{Hexes} = \text{Endurance} / (40 * 4)$$

## 2. Speed (Hex/day)

Speed is a measure of movement (duh). Under Mission Speed a ship will move (hexes/s) at Cruise speed for 12 hours and Max speed for 12 hours.

```
cruise = (int)Math.floor((theCruiseSpeed * 12));
max= (int)Math.floor((theMaxSpeed * 12));
dailyHex = (cruise + max)/40;
```

## Fuel/Hex

```
fuelhex = (float)GetFuel() / (float)GetShip[b]Range[/b]_MissionSpd();
fuelhex = (float)Math.round(fuelhex * 100) / 100;
```

## Fuel/Day

```
float fuelUseDaily = (float)GetShipFuelPerHex() *
(float)GetShipDailyHexMovement_Mission();
```

## Cargo Eff.

```
Eff = Speed * cargo * endurance / fuel
(Although I may change this to hexes.)
```

## b. Ship Tonnage and cargo space

So to maximise efficiency we need to look for one day loads and maximising the Total load of the TF. So the "Ship load" is how much can be loaded in one day and the "Total Load" is the port to TF max load in a day. Thus, by marrying cargo ships to ports you can get a good momentum moving. For instance, Shanghai 3200/73200 - so I could use anything less in cargo than an Ansyu-C (3001 cargo)(although it is nice to keep them same size, speed, type) and have the TF size less than but close to 72000 cargo. Tonnage should also not exceed Docking(k) including escorts.

In the end, I decided not to worry about the Ship Load max for Shanghai as it was a larger hop and 2 day loads were deemed more efficient. And instead of 5 convoys only 2 were needed. This is the sort of thing that you're going to have to trade off when deciding.

So, one TF ready at port at a time and stagger them. But then in the next section you'll find that all those small ships are inefficient and sucking fuel like a ... Before that have a look at the next table to see what my choices were. Available in Tracker 1.9.

| Filter:        | Pickup Port: | Shanghai  | Offload Port: | Nagasaki/Sasebo | Type:         | Resources     | Hexes:        | 15       |                |                |       |           |            |            |           |            |
|----------------|--------------|-----------|---------------|-----------------|---------------|---------------|---------------|----------|----------------|----------------|-------|-----------|------------|------------|-----------|------------|
| Location       | Region       | Port Size | Ship Dock     | Tf Dock         | Res Ship Load | Res Port Load | Oil Ship Load | Oil Load | Fuel Ship Load | Fuel Port Load |       |           |            |            |           |            |
| Nagasaki/Sa... | Japan        | 7         | 0             | 104000          | 21200         | 91200         | 7000          | 34375    | 7000           | 34375          |       |           |            |            |           |            |
| Shanghai       | Japan        | 7         | 0             | 104000          | 3200          | 73200         | 7000          | 34375    | 7000           | 34375          |       |           |            |            |           |            |
| Name           | Type         | Ships     | Fuel/Hex      | Hex/Day         | Fuel/Day      | Cargo/(F/...  | Tonnage       | Cargo    | Liquid         | Ships          | Load  | TfTonnage | MinConv... | ShipsTotal | TF Fuel/d | Tfs Fuel/d |
| To'su Cargo    | xAKL         | 37        | 1.75          | 5               | 8             | 35307         | 215           | 170      | 0              | 430            | 73100 | 92450     | 6          | 2580       | 3440      | 20640      |
| Yusen S Cargo  | AK           | 10        | 3.57          | 9               | 32            | 1144533       | 6840          | 6380     | 0              | 11             | 70180 | 75240     | 3          | 33         | 352       | 1056       |
| Kyushu Cargo   | xAK          | 32        | 3.36          | 9               | 30            | 1087532       | 5935          | 5412     | 300            | 13             | 70356 | 77155     | 3          | 39         | 390       | 1170       |
| Yusen A Cargo  | xAK          | 7         | 5.8           | 9               | 52            | 663681        | 6825          | 6010     | 0              | 12             | 72120 | 81900     | 3          | 36         | 624       | 1872       |
| Yusen N Cargo  | xAK          | 57        | 5.48          | 8               | 43            | 623196        | 6400          | 5795     | 300            | 12             | 69540 | 76800     | 3          | 36         | 516       | 1548       |
| Husimi Cargo   | xAK          | 25        | 4.8           | 7               | 33            | 460416        | 4675          | 4420     | 0              | 16             | 70720 | 74800     | 4          | 64         | 528       | 2112       |
| Toho Cargo     | xAK          | 53        | 4.89          | 7               | 34            | 361434        | 3675          | 3525     | 0              | 20             | 70500 | 73500     | 4          | 80         | 680       | 2720       |
| Ansyu-C Cargo  | xAK          | 54        | 4.77          | 7               | 33            | 327381        | 2980          | 3001     | 0              | 24             | 72024 | 71520     | 4          | 96         | 792       | 3168       |
| Kasu-D Cargo   | xAKL         | 46        | 2.29          | 6               | 13            | 331441        | 1900          | 1725     | 0              | 42             | 72450 | 79800     | 5          | 210        | 546       | 2730       |
| Lima Cargo     | xAK          | 46        | 5.2           | 7               | 36            | 588942        | 6475          | 6125     | 0              | 11             | 67375 | 71225     | 4          | 44         | 396       | 1584       |
| Aden Cargo     | xAK          | 189       | 4.88          | 6               | 29            | 421359        | 4875          | 4670     | 0              | 15             | 70050 | 73125     | 5          | 75         | 435       | 2175       |
| Ehime Cargo    | xAK          | 58        | 4.54          | 6               | 27            | 346170        | 3425          | 3575     | 0              | 20             | 71500 | 68500     | 5          | 100        | 540       | 2700       |
| Akasi Cargo    | xAK          | 57        | 4.25          | 6               | 25            | 387788        | 3675          | 3750     | 0              | 19             | 71250 | 69825     | 5          | 95         | 475       | 2375       |
| Gozan Cargo    | xAK          | 58        | 2.9           | 5               | 14            | 286758        | 2375          | 2310     | 0              | 31             | 71610 | 73625     | 6          | 186        | 434       | 2604       |
| Miyati Cargo   | xAKL         | 59        | 2.86          | 5               | 14            | 255146        | 2050          | 2027     | 0              | 36             | 72972 | 73800     | 6          | 216        | 504       | 3024       |
| Daigen Cargo   | xAKL         | 68        | 2.29          | 5               | 11            | 247412        | 1650          | 1570     | 0              | 46             | 72220 | 75900     | 6          | 276        | 506       | 3036       |
| Kiso-E Cargo   | xAKL         | 69        | 2.13          | 5               | 10            | 141830        | 830           | 795      | 0              | 92             | 73140 | 76360     | 6          | 552        | 920       | 5520       |
| Std-C Caroo    | xAK          | 17        | 3.93          | 6               | 23            | 335901        | 2900          | 3001     | 0              | 24             | 72024 | 69600     | 5          | 120        | 552       | 2760       |

## Ship Efficiency (this is for advanced players)

Efficiency is measured in fuel consumption and Cargo efficiency. Fuel is of vital importance to the Japanese economy and therefore using the best ship for hauling is not just about docking & load rates, but also speed and capacity. This should also be considered when building merchant type ships too. The table above shows you the pertinent efficiency info Fuel/Day and Cargo Eff. Higher numbers are better for Cargo Eff and lower is better for fuel/mile.

### Convoys

So, let's make a convoy plan, allocate ships and get the hard work done – so that we can rest for the duration of the war. Dreaming! (Watch the Australian movie “The Castle”)

***Note – I've tried to make this as seamless as possible by having most convoys routes dedicated to one offload port. I did this for obvious clarity. You may feel that some of this is inefficient. I know many players now, who run convoys from Shikuka to Nth Hokkaido and then from Hokkaido to Japan. I wouldn't recommend that until Wakkanai is well developed.***

In most cases I tried to look at the route from a number of standpoints including port load, ship load, fuel consumption, available shipping & need as well as in some cases speed and capacity.

This plan will hopefully suck Resources from regions with good stockpiles and eventually you'll have to rework the numbers to get a parity going between regional production and convoy pickups; to be efficient again. Also note that out of 942 Merchant ships, I'm using 185 ... Remember this when you come to Merchant Shipping Production!

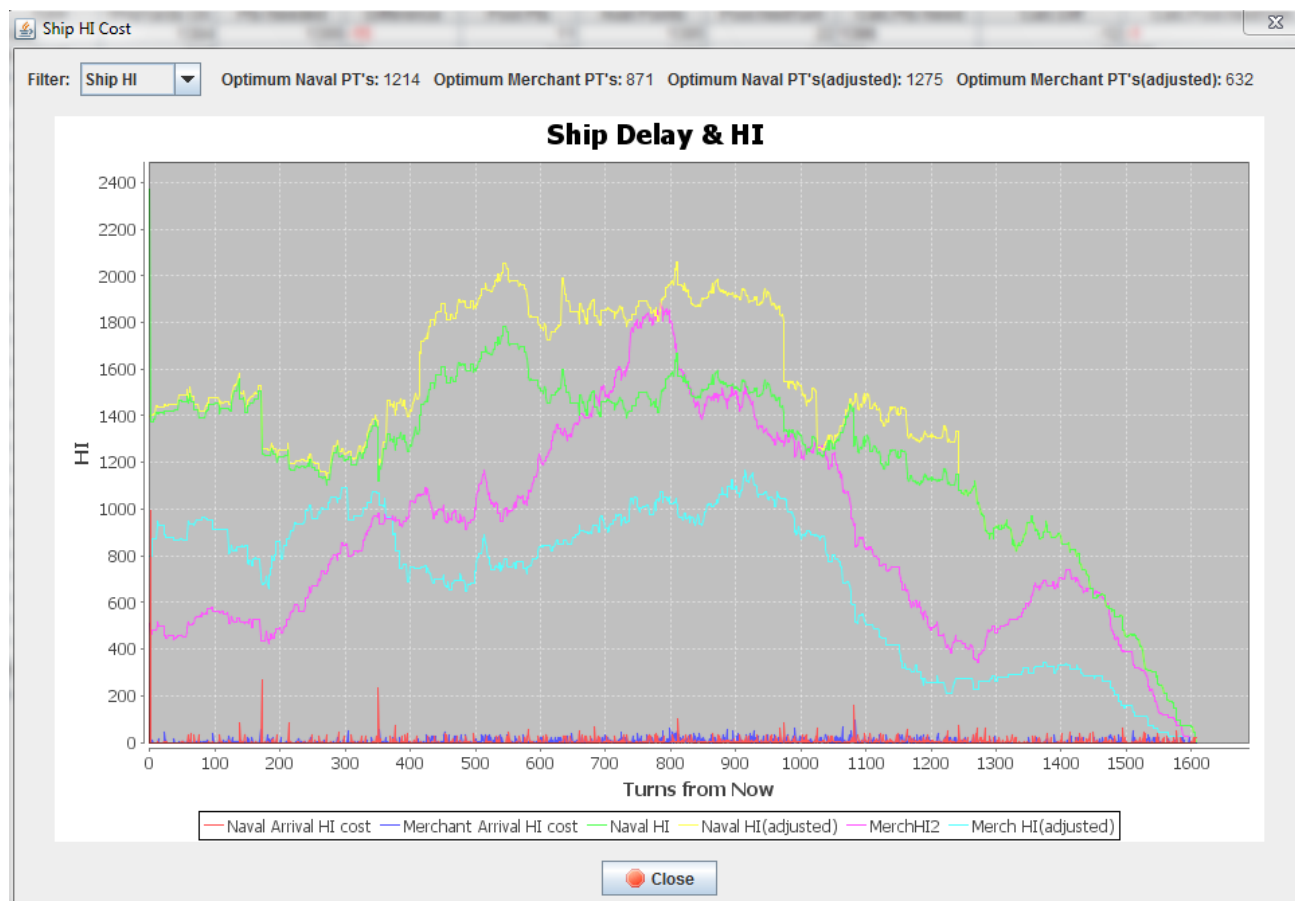
You'll note that fuel consumption is fairly high for some of the routes especially the Akasi route from Port Arthur to Fukuoka. Once Port Arthur becomes dry, I'd disband this TF and allow the Lima to do the job. Or look to better ships ... And If I can suck the Res down to Fusan or Keijo – so much the better. So, at present we're looking at about 3-4K fuel usage for our convoy system per day.

Chart below should say Toyohara (Sakhalin) to Iwaki.

| Pickup                       | DropOff    | Distance | Class    | Ships | Load   | Min No. of Convoys | Total Ships | Ship Fuel Use 1 way | Fuel Use Per TF/d | All TF Fuel Use/d | TF Tonnage | Remaining Ships |
|------------------------------|------------|----------|----------|-------|--------|--------------------|-------------|---------------------|-------------------|-------------------|------------|-----------------|
| Toyahama                     | Iwaki      | 19       | Yusen-N  | 3     | 17385  | 4                  | 12          | 89                  | 99                | 396               | 19200      | 45              |
| Kushiro                      | Yokohama   | 15       | Yusen -A | 3     | 18030  | 2                  | 6           | 73                  | 132               | 264               | 20475      | 1               |
| Sapporo                      | Hirosaki   | 6        | Toho     | 9     | 31725  | 3                  | 27          | 24                  | 261               | 783               | 33075      | 26              |
| Hakkodate                    | Ominato    | 2        | Gozan    | 14    | 32340  | 2                  | 28          | 4                   | 168               | 336               | 33250      | 30              |
| Fusan                        | Shimoneski | 2        | Kasu-D   | 10    | 17250  | 1                  | 10          | 3                   | 90                | 90                | 19000      | 36              |
| Keijo                        | Fukuoka    | 11       | Lima     | 3     | 18375  | 3                  | 9           | 48                  | 93                | 248               | 19425      | 37              |
| Shanghai                     | Sasebo     | 12       | Aden     | 15    | 70050  | 2                  | 30          | 50                  | 315               | 630               | 73125      | 159             |
| Port Arthur (waypoint Moppo) | Fukuoka    | 15       | Akasi    | 40    | 150000 | 1                  | 40          | 55                  | 880               | 880               | 147000     | 17              |
| Port Arthur (waypoint Moppo) | Fukuoka    | 15       | Lima     | 23    | 140875 | 1                  | 23          | 66                  | 744               | 713               | 140875     | 14              |
|                              |            |          |          | 120   | 496030 | 19                 | 185         | 412                 | 2782              | 4340              | 505425     | 577             |

## Ship Yards

As I stated earlier Naval shipyards can produce 1384 points per turn and Merchant 807. Naval and merchant vessels are categorised differently according to their type for the purposes of production. To build all the naval ships over the course of the war the optimum points is 1214 & Merchant 871. So, why did I say earlier to increase Naval Ship Yards by 100 (macro section)? The need for NS points exceeds what you're going to build for the first year or so and we need those ships ASAP.



### Shipbuilding – Points required per ship.

There are 3 basic modes that a ship can be in before completion. And three different build rates (normal, accelerated or halted). I'm using the Tracker definitions here, but they equate well with what is happening in game.

Durability = ship durability = HI points to build/d (normal mode)

Building (time)  $\text{ship\_delay} \leq \text{durability} * 10$

Normal Mode – HI points = durability

Accel. Mode (-2 delay/d) – HI points = durability \* 3

Queued (time)  $\text{ship\_delay} > \text{durability} * 10$  &&  $\text{delay} \leq \text{durability} * 30$

Normal Mode – HI point = nothing

Accel. Mode (-2 delay/d) – HI points = durability

Blue Print (time)  $\text{ship\_delay} > \text{durability} * 30$

Normal Mode – HI points = nothing

Accel. Mode – not avail.

Halted = no points & delay is not reduced.

### Example of Ship acceleration

Durability 30 tanker, 300 days to build normal/ 150 accel..

normal build = 9000HI

Accel build = 13500HI

#### Cargo 11600 Liquid

- As fuel = 5800 HI points; so 2 trips basically pays for itself on normal. 3 trips as accelerated.
- As Oil =  $11600 \times 9 = 104400$  fuel (paid in full)

Not to say that you should be hauling Oil ... Fuel is what is needed.

Gets a bit more complex with Accel during the  $>dur*10 <dur*30$  phase (queued)

- Accel Queued + Normal build =  $(dur*((delay-(dur*10))/2) + (dur*(dur*10)))$
- Accel Queued + Accel Build =  $(dur*((delay-(dur*10))/2) + (dur*3)*((dur*10)/2))$

So the maths with a ship that has just become queued (the extreme case)

queued & build time = 900 days; .

1.  $(30*(900-(30*10))/2) + (30*(30*10)) = 9000 + 9000 = 18000\text{HI}$  (4 trips)

time = 600 days

2.  $(30*(900-(30*10))/2) + (30*3)*((30*10)/2) = 9000 + 13500 = 22500\text{HI}$  (5 trips)

time = 450 days

## **Naval**

If we look at the graphic above, you'll note that the green line is normal build and the yellow with adjustments made. The adjustments I've made are below:

- Stop Shinano (-157)

- Accelerate 3x Unryu type CV's. (Queued mode ( $61 \times 3 = 183$ ))

This leaves you about minus 30 points. Hence, this is why the yellow line is just above the green until about day 360. So, why does the yellow line continue upward after that point? Well from that point CV Amagi (one of the Unryu class CV's I've accelerated) enters "Building" mode and it's points jump from 63 to 189 points, overall plus 126 points. Quickly followed by CV. Katsuragi. Here you might decide to turn them back to Normal build mode.

Eventually, after 6 months or so, I'd be looking to cut down on the smaller SS's.

## **Merchant**

Japan starts the war with enough transport capability to deal with pretty much anything. I'm using about 185-200 merchants for convoys, leaving 500+ for other duties. The real problem is having enough good ships and that's where we'll look at the different classes and decide what to produce.

So turn everything off, except those that are currently building and then we'll (you'll) determine what you want. The purple and blue graphic will tell you that turning off all those merchants give you a HI windfall. But without also turning off the corresponding no of Merchant Shipyards you'll just be producing points, using HI and building nothing. So remember to balance the equation.

These are my thoughts:

| Type    | Total Number build able (no I'd build) | Additional                                                                                       |
|---------|----------------------------------------|--------------------------------------------------------------------------------------------------|
| Std – B | 17(10)                                 | Convertible, good fuel eff.                                                                      |
| Std – A | 90(20+)                                | Convertible, v.good fuel eff.                                                                    |
| AP/xAP  | 14(14)                                 | AP's are good.                                                                                   |
| AMC     | 2(2)                                   |                                                                                                  |
| TK's    | All                                    | Except the small one's < 4000 liq; Accelerate some from '42- '43. Get that Oil / Fuel back home. |
| CVE's   | 7(3)                                   | First 3 only.                                                                                    |

## Pilots and Training

Pilots training is part of the game and as a large percent of your time will be involved in it, it is best to understand the workings of it. It usually takes about 2 months to train up a group of recruits to the threshold of 70 in the primary skill but NOT experience. Experience takes longer and is usually achieved better in combat mode than in training.

### Mission skill

*The skill used is primarily based on the primary mission (or in case of TRAINING, the secondary mission)*

GM\_SEARCH: SKILL\_NAV\_SEARCH  
GM\_RECON: SKILL\_RECON  
GM\_AF\_ATTACK: SKILL\_GROUND\_BOMB  
GM\_GROUND\_ATTACK: SKILL\_GROUND\_BOMB  
GM\_PORT\_ATTACK: SKILL\_GROUND\_BOMB  
GM\_CITY\_ATTACK: SKILL\_GROUND\_BOMB  
GM\_ESCORT: SKILL\_AIR  
GM\_SWEEP: SKILL\_AIR  
GM\_ASW: SKILL\_ASW  
GM\_SUPPLY\_TRANSPORT: SKILL\_TRANSPORT  
GM\_TROOP\_TRANSPORT: SKILL\_TRANSPORT  
GM\_KAMIKAZE: SKILL\_NAV\_BOMB\_LOW  
GM\_NAV\_ATTACK: SKILL\_NAV\_BOMB

*The skill can then be modified by other things.*

- a) if the aircraft is carrying a torpedo and the group is configured not to use bombs, and the mission is Naval Attack, then the skill used is SKILL\_NAV\_TORP;*
- b) else if the group's altitude is 100' and the mission is not escort, then the skill used is SKILL\_STRAFE;*
- c) else if the group's altitude is less than 6000' and the skill is SKILL\_NAV\_BOMB, and the aircraft is classed as an Attack Bomber, then the skill used is SKILL\_NAV\_BOMB\_LOW;*
- d) else if the group's altitude is less than 6000' and the skill is SKILL\_GROUND\_BOMB, and the aircraft is classed as an Attack Bomber, then the skill used is SKILL\_GROUND\_BOMB\_LOW;*
- e) else if the group's altitude is less than 1001' and the skill is SKILL\_NAV\_BOMB, then the skill used is SKILL\_NAV\_BOMB\_LOW;*
- f) else if the group's altitude is less than 1001' and the skill is SKILL\_GROUND\_BOMB, then the skill used is SKILL\_GROUND\_BOMB\_LOW.*

*Sometimes the skill can be pre-selected by events happening and the above does not apply. These cases are generally out of the player's control. For example, in air-to-air combat, SKILL\_DEFENSIVE is used by the defender, and SKILL\_AIR by the attacker. Or in case of passing on experience, a lesser skill might be selected to be improved upon.*

*Note also that sometime the mission itself can change (eg Port Attack has a chance to become a Naval Attack, in which case the combat skill would be SKILL\_NAV\_BOMB. And could be further changed depending on altitude)*

*In case it is not clear "The same rules above apply to both training and combat".*

Quote from MichealM

Some pointers first with training:

1. Having a full complement of planes does help.
2. Adding more pilots than planes does take a little longer to train all of the pilots, usually about a 1/3 more time.
3. Reduce op's losses by training at 0 range and medium alt.
4. Using a Primary mission other than training but also using a training % will gain exp. and increase the primary mission skill only.

| Training      | Alt    | Air | NavB | NavT | NavS | Rec | ASW | Trn | GrdB | LowN | LowG | Strf | DefN |
|---------------|--------|-----|------|------|------|-----|-----|-----|------|------|------|------|------|
| Escort        | (all)  | X   |      |      |      |     |     |     |      |      |      |      | X    |
| Sweep         | 100    |     |      |      |      |     |     |     |      |      |      | X    | X    |
|               | 1000   | X   |      |      |      |     |     |     |      |      |      |      | X    |
|               | >=2000 | X   |      |      |      |     |     |     |      |      |      |      | X    |
| Airfield/Port | 100    |     |      |      |      |     |     |     |      |      |      | X    | X    |
|               | 1000   |     |      |      |      |     |     |     |      |      | X    |      | X    |
|               | >=2000 |     |      |      |      |     |     |     | X    |      |      |      | X    |
| Naval(Bomb)   | 100    |     |      |      |      |     |     |     |      |      |      | X    | X    |
|               | 1000   |     |      |      |      |     |     |     |      | X    |      |      | X    |
|               | >=2000 |     | X    |      |      |     |     |     |      |      |      |      | X    |
| Naval(Torp)   | All    |     |      | X    |      |     |     |     |      |      |      |      | X    |
| Ground        | 100    |     |      |      |      |     |     |     |      |      |      | X    | X    |
|               | 1000   |     |      |      |      |     |     |     |      |      | X    |      | X    |
|               | >=2000 |     |      |      |      |     |     |     | X    |      |      |      | X    |
| General(Bomb) | 100    | X   |      |      |      |     |     |     |      |      |      | X    | X    |
|               | 1000   | X   |      |      | X    | X   | X   | X   |      | X    | X    |      | X    |
|               | >=2000 | X   | X    |      | X    | X   | X   | X   | X    | X    |      |      | X    |
| General(T)    | 100    | X   |      |      |      |     |     |     |      |      |      | X    | X    |
|               | 1000   | X   |      |      | X    | X   | X   | X   |      | X    | X    |      | X    |
|               | >=2000 | X   |      | X    | X    | X   | X   | X   | X    | X    |      |      | X    |
| Recon         | 100    |     |      |      |      |     |     |     |      |      |      | X    | X    |
|               | >=1000 |     |      |      |      | X   |     |     |      |      |      |      |      |
| Search        | 100    |     |      |      |      |     |     |     |      |      |      | X    | X    |
|               | >=1000 |     |      |      | X    |     |     |     |      |      |      |      |      |
| ASW           | 100    |     |      |      |      |     |     |     |      |      |      | X    | X    |
|               | >=1000 |     |      |      |      |     | X   |     |      |      |      |      |      |

Harvest pilots in Japan and Manchuria. Add pilots back to those groups from pool. Train at 100% and range 0. This will be an ongoing affair and I'd rather leave it up to you ... but I think a 2:1 or 3:2 ratio of groups active to groups training at the beginning makes for a better trained pool when you need them. Remember you'll need some with a range of skills including ASW.

## **Air Production**

Everyone has a different idea about plane building. This is my take for initial planning. Each war is going to be different. Some fight hard, some lose a lot. There is no great measure for things except when a plan meets the grist. Also Engines and aircraft are related to the other. So, I usually work on aircraft Build then R&D, then save, then load in Tracker and determine the Engine use. You should also become very familiar with the upgrade paths of aircraft factories.

### **Some quick notes**

- You don't need to R&D to get a plane. They will arrive on the date defined.
- R&D factories are useful only to advance a planes scheduled arrival.
- Production Factories will upgrade automatically when there is a new upgrade due (along the same upgrade path). And you can manually upgrade them at that time too.
- R&D will not produce points until all factories are repaired.
- R&D factories will become production facilities when the plane becomes available.
- Production factories will produce anytime as long as 1 factory unit is repaired and there are enough HI points available.
- You need the right model engine available to produce a plane.
- Thinking about it ??

### **Airframes - R&D easy V realistic & PDU On**

R&D easy verse realistic is a slightly different ball game. With easy you get to move production plants to R&D and vice-versa. With realistic you cannot; you can however allow your R&D plants to become production facilities by not changing them before the plane becomes available. This also means that with realistic research, you are using a lot more supplies to repair the R&D plants and then also building separate production plants. I'd tend to look at allowing some of your R&D plants become production facilities, while also keeping in mind which ones you want to push along the upgrade path (if applicable). There is no damage or cost associated with moving a fully repaired R&D facility to the next upgrade option as defined by the editor. The advantage with non-realistic is that fully repaired production plants can be moved along this path at no cost too. Which is why building the A6M2, and then switching it to the Baku and then the M5b is a good option for non-realistic, but can't be achieved with realistic R&D.

Player Defined Upgrades (PDU) off restricts the player to those aircraft upgrades indicated by the editor. It is highly restrictive, makes you produce small production runs and while simpler in some ways (you know what you need), it is also more difficult in the aforementioned factory use. Some like its' historical accuracy. PDU on allows many upgrade options as long as the plane is along the plane factory, group upgrade, type and attribute scheme. Sometimes it is necessary for example to change type from CV capable to non to open other paths. Tracker once again can help you with this.

## Understanding PDU

As I stated in the previously, PDU OFF restricts what air-groups can upgrade to via the information stored in the DB. You also cannot downgrade using PDU OFF. This information can be accessed by that, in game or through Tracker. It has nothing to do with factory upgrades, which are determined by the aircraft data in the scenario not the air-group data in the scenario.

The difference with PDU ON is that while air group upgrades can still follow the predefined data in the scenario design, you can also deviate from that too.

E.g.

In this example, the group is allowed to upgrade to all those showing status Defined with both PDU ON and OFF. But this group would not be allowed to upgrade to Undefined with PDU OFF. “Undefined and different type” applies to PDU ON, where you’d have to upgrade to the Sen Baku(FB) to open the path of the same type to the A6M7 Zero(FB).

| WitP Tracker AE Air Group Upgrades               |      |                              |           |
|--------------------------------------------------|------|------------------------------|-----------|
| Group name: Chitose Ku S-1                       |      |                              |           |
| Current model: A5M4 Claude    Maximum planes: 27 |      |                              |           |
| Upgrade Model                                    | Pool | Status                       | Available |
| A6M2 Zero                                        | 28   | Defined                      | 41/12     |
| A6M3a Zero                                       | 0    | Defined                      | 42/12     |
| A6M5 Zero                                        | 0    | Defined                      | 43/8      |
| A6M5b Zero                                       | 0    | Defined                      | 44/6      |
| A6M2 Sen Baku                                    | 0    | Defined and different type   | 44/2      |
| A6M5c Zero                                       | 0    | Defined                      | 44/10     |
| A5M4 Claude                                      | 46   | Undefined                    | 41/12     |
| A6M8 Zero                                        | 0    | Undefined                    | 45/8      |
| A7M2 Sam                                         | 0    | Undefined                    | 45/9      |
| A6M7 Zero                                        | 0    | Undefined and different type | 45/5      |

NB\*\* Under the latest Beta, MichaelM has allowed even more freedom in allowing you to see upgrades which don’t conform to type. The downside is that there is an associated PP cost to deviate from the predefined path, not just the opening of paths to new aircraft but for all upgrades outside the path.

## Factory Upgrades

Simply put, Air Factory upgrades will only occur with factories producing planes. Further, this upgrade will only happen when a new aircraft type becomes available which is the direct upgrade to the plane being produced. This upgrade can occur later than the first date it is available (but can be manually upgraded anyway). Finally, if the option to ‘Keep’ the factory is set, then no upgrade will occur and the factory will continue to produce the initial model. So looking at the table below; the A6M2 factories will upgrade to the A6M2 Sen Baku when it becomes available in 44/2 and then the A6M5b on 44/6 and so on.

Air Factory upgrades are easier to understand and use under Non-Realistic than Realistic, as you can change from R&D to production and back again. With realistic however, you cannot change from a Production factory to an R&D factory, but there is a once only one way from R&D to a production facility. This means that when the aircraft your R&D facility is researching is about to become available you need to make a choice to either move the factory to another R&D model or let it become a production plant.

**Let me summarise below.**

| Upgrades                                  | Realistic R&D                                                                                                                                                                                                                                                                                             | Non Realistic                                                                                                                                                                       |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Production Factories                      | <ol style="list-style-type: none"> <li>Will upgrade to the direct upgrade when available. (no cost)</li> <li>Will upgrade when ‘keep’ is off.</li> <li>Can’t revert to R&amp;D factory.</li> </ol>                                                                                                        | <p>Same as realistic except</p> <ol style="list-style-type: none"> <li>Can revert to R&amp;D factory. Allows fully repaired production to become fully repaired R&amp;D.</li> </ol> |
| R&D Factories<br>** see section R&D below | <ol style="list-style-type: none"> <li>No auto upgrades.</li> <li>Upgrades can be applied manually along the upgrade path as long as totally repaired for no cost. Or if this is off - path, then factory size is reduced and need repairing .</li> <li>One way upgrade to production factory.</li> </ol> | <p>Same as realistic except</p> <ol style="list-style-type: none"> <li>Can become production or another R&amp;D factory.</li> </ol>                                                 |

| ID  | Aircraft           | Type | Avail | Fcty Upgrade    | Type | Upgrade | Fcty Upgrade      | Type | Upgrade | Fcty Upgrade      | Type | Upgrade | Fcty Upgrade   | Type | Upgrade | Fcty Upgrade   | Type | Upgrade |
|-----|--------------------|------|-------|-----------------|------|---------|-------------------|------|---------|-------------------|------|---------|----------------|------|---------|----------------|------|---------|
| 603 | A6M2 Zero          | F    | 41/12 | A6M2 Sen Baku   | FB   | 44/2    | A6M5b Zero        | F    | 44/6    | A6M5c Zero        | F    | 44/10   | A6M8 Zero      | F    | 45/8    |                |      |         |
| 605 | A6M2-N Rufe        | FF   | 42/4  | A6M5 Zero       | F    | 43/8    | A6M5b Zero        | F    | 44/6    | A6M5c Zero        | F    | 44/10   | A6M8 Zero      | F    | 45/8    |                |      |         |
| 609 | A6M3 Zero          | F    | 42/6  | A6M3a Zero      | F    | 42/12   | A6M5 Zero         | F    | 43/8    | A6M5b Zero        | F    | 44/6    | A6M5c Zero     | F    | 44/10   | A6M8 Zero      | F    | 45/8    |
| 617 | A6M7 Zero          | FB   | 45/5  | A6M8 Zero       | F    | 45/8    |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 630 | B6N1 Jill          | TB   | 43/5  | B6N2 Jill       | TB   | 43/10   | B6N2a Jill        | TB   | 44/11   |                   |      |         |                |      |         |                |      |         |
| 639 | C6N1 Myrt          | RC   | 44/8  | C6N2 Myrt       | RC   | 45/11   |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 644 | D3A1 Val           | DB   | 41/12 | D3A2 Val        | DB   | 42/8    | D5Y1 Myjo         | DB   | 45/11   |                   |      |         |                |      |         |                |      |         |
| 649 | D4Y1 Judy          | DB   | 43/4  | D4Y2 Judy       | DB   | 44/4    | D4Y3 Judy         | DB   | 44/8    | D4Y4 Judy         | DB   | 45/2    |                |      |         |                |      |         |
| 655 | D4Y1-C Judy        | RC   | 42/10 | D4Y2-C Judy     | RC   | 44/4    |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 660 | E13A1 Jake         | FP   | 41/12 | E13A1b Jake     | FP   | 44/11   |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 670 | G3M2 Nell          | LB   | 41/12 | G3M3 Nell       | LB   | 42/5    |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 673 | G4M1 Betty         | LB   | 41/12 | G4M2 Betty      | LB   | 44/1    | G4M2a Betty       | LB   | 44/6    | G4M3a Betty       | LB   | 44/11   |                |      |         |                |      |         |
| 681 | H6K2-L Mavis       | TR   | 42/4  | H6K4-L Mavis    | TR   | 42/9    |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 683 | H6K4 Mavis         | PT   | 41/12 | H6K5 Mavis      | PT   | 42/6    |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 686 | H8K1 Emily         | PT   | 42/7  | H8K2 Emily      | PT   | 43/3    |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 691 | J1N1-S Irving      | NF   | 43/10 | J1N1-Sa Irving  | NF   | 44/10   |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 694 | J2M2 Jack          | F    | 43/9  | J2M3 Jack       | F    | 44/4    | J2M5 Jack         | F    | 45/1    |                   |      |         |                |      |         |                |      |         |
| 715 | N1K1-J George      | F    | 43/9  | N1K2-J George   | F    | 44/11   | N1K5-J George     | F    | 45/10   |                   |      |         |                |      |         |                |      |         |
| 721 | P1Y1 Frances       | LB   | 43/11 | P1Y2 Frances    | LB   | 44/11   |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 747 | Ki-21-IIa Sally    | LB   | 41/12 | Ki-21-IIb Sally | LB   | 42/12   |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 761 | Ki-43-Ic Oscar     | F    | 41/12 | Ki-43-IIa Oscar | F    | 42/11   | Ki-43-IIb Oscar   | F    | 43/5    | Ki-43-IIIa Oscar  | F    | 44/10   | Ki-43-IV Oscar | F    | 45/8    |                |      |         |
| 768 | Ki-44 Tojo         | F    | 42/9  | Ki-44-IIa Tojo  | F    | 42/9    | Ki-44-IIb Tojo    | F    | 43/7    | Ki-44-IIIc Tojo   | F    | 44/3    |                |      |         |                |      |         |
| 775 | Ki-45 KAla Nick    | FB   | 42/5  | Ki-45 KAlc Nick | FB   | 43/5    |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 776 | Ki-45 KAlb Nick    | FB   | 42/12 | Ki-45 KAlc Nick | FB   | 43/5    |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 782 | Ki-46-II Dinah     | RC   | 41/12 | Ki-46-III Dinah | RC   | 43/1    |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 788 | Ki-48-Ib Lily      | LB   | 41/12 | Ki-48-IIa Lily  | LB   | 42/4    |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 790 | Ki-48-IIb Lily     | DB   | 43/1  | Ki-48-IIc Lily  | DB   | 43/8    |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 793 | Ki-49-Ia Helen     | LB   | 42/4  | Ki-49-IIa Helen | LB   | 42/9    | Ki-49-IIb Helen   | LB   | 43/9    |                   |      |         |                |      |         |                |      |         |
| 797 | Ki-51 Sonia        | LB   | 41/12 | Ki-51b Sonia    | LB   | 43/11   |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 805 | Ki-57-I Topsy      | TR   | 41/12 | Ki-57-II Topsy  | TR   | 42/3    |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 809 | Ki-61-Ia Tony      | F    | 43/2  | Ki-61-Ib Tony   | F    | 43/9    | Ki-61-Ic Tony     | F    | 44/4    | Ki-61-II KAI Tony | F    | 44/8    | Ki-100-I Tony  | F    | 45/3    | Ki-100-II Tony | F    | 45/9    |
| 811 | Ki-61-Ic Tony      | F    | 43/9  | Ki-61-Ib Tony   | F    | 44/4    | Ki-61-II KAI Tony | F    | 44/8    | Ki-100-I Tony     | F    | 45/3    | Ki-100-II Tony | F    | 45/9    |                |      |         |
| 815 | Ki-67-Ia Peggy     | LB   | 44/4  | Ki-67-Ib Peggy  | LB   | 44/12   |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 818 | Ki-67-Ia (T) Peggy | LB   | 44/9  | Ki-67-Ib Peggy  | LB   | 44/12   |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 825 | Ki-84a Frank       | F    | 44/4  | Ki-84r Frank    | F    | 45/9    |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 826 | Ki-84b Frank       | F    | 45/3  | Ki-84r Frank    | F    | 45/9    |                   |      |         |                   |      |         |                |      |         |                |      |         |
| 844 | Ki-115a Tsurugi    | LB   | 45/6  | Ki-115b Tsurugi | LB   | 45/12   |                   |      |         |                   |      |         |                |      |         |                |      |         |

*This Table only applies to Scen 1 – showing only factory types that can upgrade.*

### A little on R&D

R&D is one of the things that I've taken a great interest in over the years. Threads pop up from time to time and I guess since Michael made it clearer – maybe less so in the future.

Some simple things to consider:

The optimum size for a R&D factory is 30.

The longer away the arrival date, the longer it will take to start repairing the factory.

Larger factories repair at a quicker rate than smaller factories. But as they take longer to repair overall it's a bit of a catch-22. Actually from what I've noticed they basically repair around the same time.

R&D points are only accumulated when the factory is fully repaired.

100 points equals 1 month reduction.

Multiple 30(0) factories give the best results.

*Whether you like it or not in AE (I don't):*

Once repaired, a factory can be pushed along the upgrade path of the aircraft to any plane in the sequence of upgrades. If you go off the upgrade path, your factories will revert to 0(30).

### Engine Pool R&D Bonus.

Engines are not utilized until the plane is in production. However, if engine numbers(pool) for that model is over 500, there is an R&D bonus. (usually 1 extra point of R&D / turn).

1. size 30 is optimal but there is a separate a/c R&D bonus for much larger R&D factories. But to get these bonuses you need to expand the factory into a ridiculous level. It is much easier to do #2.

2. Engine pool (a/c model engine) > 500 will give a bonus of 1 to each factory which is fully repaired.

Therefore, 500 engines in pool + 1x30(0) = 2pts/d. 2x30(0) = 4 pts/day. 3x30(0) = 6pts ... etc. Crazy but true.

A size 1(0) + 500 engines = 0 pts until the factory produces once and mth and then you get the added point. So, 2 pts / mth.

A 60(0) factory + 500 engines will give 2 points a day and very rarely an added point(from the a/c factory). Not sure if you get 2 engine pts bonus in that case though.

Also, when the engine bonus kicks in over the 500 engine threshold, for every point of bonus research achieved each turn, that number of engines is deducted from the pool. This is above the nominal research rate.

E.g.

So below 500 the research for a plane at 120(0) R&D = 4, no engines used.

Above the 500 the research for the plane at 120(0) R&D = 8, 4 engines used.

The implications of this are pretty clear; research is best done with multiple 30(0) factories with 500 pooled engines for that a/c type.

| No. | Size | Est time 100 pts<br>without Engine Bonus | Est time 100 pts<br>with Engine Bonus |
|-----|------|------------------------------------------|---------------------------------------|
| 1   | 30   | 100                                      | 50                                    |
| 2   | 30   | 50                                       | 25                                    |
| 3   | 30   | 34                                       | 17                                    |
| 4   | 30   | 25                                       | 12.5                                  |
| 5   | 30   | 20                                       | 10                                    |

## **Air Production**

Some of this goes beyond the first turn, as the supplies might not be at Base to do this. I've also not made a complete scheme of what you should do as I think that is up to you to decide. The chart shows "green" things I'd do straight away, "yellow"- do within a few week → month. "Off" means to halt repair or production. These 'Off' factories are surplus factories at present and as time goes on you can decide what to do with them. If I were you, I'd double or triple up on some of the planes you want early especially from the >1944 R&D surplus.

Some of my thought regarding what I did in the following workup of air production. With realistic R&D it is important to pick and choose which planes you're going to go for. For example, there is little point trying to R&D the Shinden in '41 or get the Rufe early. However planes that are within a sweet zone of 6-24 months usually can be tried. Also, you may need to allow some R&D plants to become production facilities eventually. Lastly, some of what I've done is just a first step. For example, I don't intend on producing many A6M3's but rather push these plants along the upgrade path once repaired to the M3a or even better the M5. As I stated earlier, this is a starting point for air production. I don't want to dictate to you, this will get you off to a good start...

***This table is my workup for realistic R&D (PDU ON)...it is not for late war – just quick and dirty early war.***

| Base            | ID  | Model               | Date  | Status | Build | Repair | Action   | New Size | Model Change   | Notes                               |
|-----------------|-----|---------------------|-------|--------|-------|--------|----------|----------|----------------|-------------------------------------|
| Fukuoka         | 727 | Q1W1 Lorna          | 44/4  | r      | 0     | 11     | Off      |          |                |                                     |
| Gifu            | 757 | KI-36 Ida           | 41/12 | b      | 32    | 0      |          |          |                | Build for a month, turn off Hitachi |
| Gifu            | 775 | KI-45 KAia Nick     | 42/5  | r      | 0     | 13     |          |          |                | small production no's, allow build? |
| Gifu            | 788 | KI-48-Ib Lily       | 41/12 | b      | 34    | 0      |          |          |                |                                     |
| Gifu            | 804 | KI-56 Thalia        | 41/12 | b      | 2     | 0      | change   | 30       | B5N2 Kate      | X                                   |
| Gifu            | 809 | KI-61-Ia Tony       | 43/2  | r      | 0     | 22     | change   | 30       | D4Y1 Judy      |                                     |
| Gifu            | 811 | KI-61-Ic Tony       | 43/9  | r      | 0     | 2      | Off      |          |                |                                     |
| Gifu            | 816 | KI-67-Ib Peggy      | 44/12 | r      | 0     | 6      | Off      |          |                |                                     |
| Gifu            | 817 | KI-109-I Peggy      | 45/1  | r      | 0     | 2      | Off      |          |                |                                     |
| Gifu            | 847 | KI-119              | 45/12 | r      | 0     | 2      | Off      |          |                |                                     |
| Hachinohe       | 844 | KI-115a Tsurugi     | 45/6  | r      | 0     | 31     | Off      |          |                |                                     |
| Hamamatsu       | 712 | M6A1 Seiran         | 44/10 | r      | 0     | 1      | Off      |          |                |                                     |
| Hamamatsu       | 732 | S1A1 Denko          | 46/1  | r      | 0     | 2      | change   | 30       | B6N1           |                                     |
| Hamamatsu       | 805 | KI-57-I Topsy       | 41/12 | b      | 6     | 0      | Increase | 30       |                | X                                   |
| Hamamatsu       | 824 | KI-83               | 45/10 | r      | 0     | 1      | Off      |          |                |                                     |
| Hamamatsu       | 834 | KI-95               | 45/10 | r      | 0     | 1      | Off      |          |                |                                     |
| Hamamatsu       | 837 | KI-100-II Tony      | 45/9  | r      | 0     | 4      | Off      |          |                |                                     |
| Hamamatsu       | 849 | KI-202 Shusei       | 46/1  | r      | 0     | 2      | Off      |          |                |                                     |
| Harbin          | 752 | KI-27b Nate         | 41/12 | b      | 10    | 0      | change   | 30       | KI-43-Ic       |                                     |
| Hiroshima/Kure  | 628 | B5N2 Kate           | 41/12 | b      | 0     | 0      | Increase | 30       |                | Good ASW asset (maybe Keep)         |
| Hiroshima/Kure  | 650 | D4Y2 Judy           | 44/4  | r      | 0     | 1      | change   | 30       | D3A2 Val       |                                     |
| Hiroshima/Kure  | 658 | D4Y2-S Judy         | 44/6  | r      | 0     | 3      | change   | 30       | D3A2 Val       |                                     |
| Hiroshima/Kure  | 660 | E13A1 Jake          | 41/12 | b      | 27    | 0      |          |          |                |                                     |
| Kobe            | 688 | H8K2-L Emily        | 43/7  | r      | 0     | 1      | Off      |          |                |                                     |
| Kobe            | 714 | N1K1 Rex            | 43/7  | r      | 0     | 4      | Off      |          |                |                                     |
| Kobe            | 715 | N1K1-J George       | 43/9  | r      | 0     | 5      | Increase | 30       |                |                                     |
| Kobe            | 776 | KI-45 KAib Nick     | 42/12 | r      | 0     | 2      | change   | 30       | KI-49-Ia Helen | If (Helen = main Army LB)           |
| Kobe            | 778 | KI-45 KAId Nick     | 44/4  | r      | 0     | 5      | Off      |          |                |                                     |
| Maebashi        | 603 | A6M2 Zero           | 41/12 | b      | 56    | 0      | Increase | 60       |                |                                     |
| Maebashi        | 605 | A6M2-N Rufe         | 42/4  | r      | 0     | 9      | Increase | 10       |                |                                     |
| Maebashi        | 615 | A6M5d-S Zero        | 44/6  | r      | 0     | 20     | Off      |          |                |                                     |
| Maebashi        | 630 | B6N1 Jill           | 43/5  | r      | 0     | 14     | Increase | 30       |                |                                     |
| Maebashi        | 665 | E16A1 Paul          | 44/4  | r      | 0     | 8      | Off      |          |                |                                     |
| Maebashi        | 670 | G3M2 Nell           | 41/12 | b      | 22    | 0      |          |          |                | consolidate with Betty?             |
| Maebashi        | 690 | J1N1-C Irving       | 42/11 | r      | 0     | 7      | Increase | 30       |                |                                     |
| Maebashi        | 694 | J2M2 Jack           | 43/9  | r      | 0     | 9      | change   | 30       | N1K1-J George  |                                     |
| Maebashi        | 721 | P1Y1 Frances        | 43/11 | r      | 0     | 11     | change   | 30       | D4Y1 Judy      |                                     |
| Maebashi        | 752 | KI-27b Nate         | 41/12 | b      | 35    | 0      |          |          |                | build out until engines used        |
| Maebashi        | 761 | KI-43-Ic Oscar      | 41/12 | b      | 32    | 0      |          |          |                |                                     |
| Maebashi        | 769 | KI-44-IIa Tojo      | 42/9  | r      | 0     | 8      | Increase | 30       |                |                                     |
| Maebashi        | 825 | KI-84a Frank        | 44/4  | r      | 0     | 55     |          |          |                |                                     |
| Maebashi        | 826 | KI-84b Frank        | 45/3  | r      | 0     | 15     | change   | 30       | KI-84a         |                                     |
| Nagaoka         | 691 | J1N1-S Irving       | 43/10 | r      | 0     | 6      | Increase | 30       |                |                                     |
| Nagaoka         | 703 | Kikka               | 46/1  | r      | 0     | 2      | Off      |          |                |                                     |
| Nagaoka         | 848 | KI-201 Karyu        | 46/3  | r      | 0     | 2      | change   | 30       | D3A2 Val       |                                     |
| Nagasaki/Sasebo | 635 | B7A2 Grace          | 44/12 | r      | 0     | 9      | change   | 30       | B6N1           |                                     |
| Nagasaki/Sasebo | 668 | F1M2 Pete           | 41/12 | b      | 3     | 0      | change   | 30       | A6M2           |                                     |
| Nagoya          | 609 | A6M3 Zero           | 42/6  | r      | 0     | 24     | Increase | 30       |                | Change to M3a once 100%             |
| Nagoya          | 639 | C6N1 Myrt           | 44/8  | r      | 0     | 12     | Off      |          |                |                                     |
| Nagoya          | 640 | C6N1-S Myrt         | 45/5  | r      | 0     | 7      | Off      |          |                |                                     |
| Nagoya          | 644 | D3A1 Val            | 41/12 | b      | 12    | 0      | Increase | 30       |                | This may need further expansion     |
| Nagoya          | 649 | D4Y1 Judy           | 43/4  | r      | 0     | 9      | Increase | 30       |                |                                     |
| Nagoya          | 663 | E14Y1 Glen          | 41/12 | b      | 9     | 0      |          |          |                | continue until engines used         |
| Nagoya          | 673 | G4M1 Betty          | 41/12 | b      | 25    | 0      |          |          |                |                                     |
| Nagoya          | 747 | KI-21-IIa Sally     | 41/12 | b      | 23    | 0      | Increase | 30       |                |                                     |
| Nagoya          | 782 | KI-46-II Dinah      | 41/12 | b      | 11    | 0      | Increase | 20       |                | Main Navy Recon                     |
| Nagoya          | 815 | KI-67-Ia Peggy      | 44/4  | r      | 0     | 13     | Off      |          |                |                                     |
| Okayama         | 612 | A6M5 Zero           | 43/8  | r      | 0     | 3      | change   | 30       | A6M3           | Change to M3a once 100%             |
| Okayama         | 674 | G4M2 Betty          | 44/1  | r      | 0     | 8      | Off      |          |                |                                     |
| Okayama         | 674 | G4M2 Betty          | 44/1  | r      | 0     | 2      | Off      |          |                |                                     |
| Okayama         | 677 | G4M2e Betty         | 44/11 | r      | 0     | 1      | Off      |          |                |                                     |
| Okayama         | 679 | G4M1-L Betty        | 44/4  | r      | 0     | 5      | Off      |          |                |                                     |
| Osaka/Kyoto     | 681 | H6K2-L Mavis        | 42/4  | r      | 0     | 2      |          |          |                | Allow to produce ?                  |
| Osaka/Kyoto     | 683 | H6K4 Mavis          | 41/12 | b      | 6     | 0      | Increase | 10       |                | small production no's               |
| Osaka/Kyoto     | 840 | KI-102c Randy       | 45/10 | r      | 0     | 2      | Off      |          |                |                                     |
| Sendai          | 740 | Ka-1                | 44/9  | r      | 0     | 1      | Off      |          |                |                                     |
| Tokyo           | 709 | L2D2 Tabby          | 44/1  | r      | 0     | 4      | Off      |          |                |                                     |
| Tokyo           | 763 | KI-43-IIb Oscar     | 43/5  | r      | 0     | 5      | change   | 30       |                |                                     |
| Tokyo           | 796 | KI-49-II KA1 Helen  | 43/5  | r      | 0     | 3      | Off      |          |                |                                     |
| Tokyo           | 797 | KI-51 Sonia         | 41/12 | b      | 30    | 0      |          |          |                | build for 1 mth                     |
| Tokyo           | 801 | KI-54c Hickory      | 43/1  | r      | 0     | 6      | change   | 30       | A6M3           | Change to M3a once 100%             |
| Tokyo           | 819 | KI-74-I Patsy       | 45/10 | r      | 0     | 3      | Off      |          |                |                                     |
| Toyama          | 785 | KI-46-III KA1 Dinah | 44/10 | r      | 0     | 4      | Off      |          |                |                                     |
| Tsu             | 621 | A7M2 Sam            | 45/9  | r      | 0     | 2      | Off      |          |                |                                     |
| Tsu             | 622 | A7M3-J Sam          | 46/1  | r      | 0     | 2      | Off      |          |                |                                     |
| Tsu             | 631 | B6N2 Jill           | 43/10 | r      | 0     | 1      | change   | 30       | B6N1           |                                     |
| Tsu             | 655 | D4Y1-C Judy         | 42/10 | r      | 0     | 2      | Increase | 10       |                |                                     |
| Tsu             | 677 | G4M2e Betty         | 44/11 | r      | 0     | 3      | Off      |          |                |                                     |
| Tsu             | 678 | G4M3a Betty         | 44/11 | r      | 0     | 2      | Off      |          |                |                                     |
| Tsu             | 699 | J7W1 Shinden        | 45/12 | r      | 0     | 2      | Off      |          |                |                                     |
| Tsu             | 701 | J8M1 Shusei         | 45/12 | r      | 0     | 2      | Off      |          |                |                                     |
| Tsu             | 818 | KI-67-Ia (T) Peggy  | 44/9  | r      | 0     | 8      | Off      |          |                |                                     |
| Utsunomiya      | 830 | KI-93-Ia            | 45/10 | r      | 0     | 2      | Off      |          |                |                                     |

## Engines

Table shows planning up with the green stuff implemented.

Those crossed out are no longer needed and should be shifted to other production. The Red boxes indicated factories that need expansion.

| ID   | Engine                       | Avail | Pool | Building | 12/41    | 1/42     | 2/42     | 3/42     | 4/42     | 5/42     | 6/42     | 7/42     | 8/42     | 9/42     | 10/42    | 11/42    |
|------|------------------------------|-------|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 238  | <del>Hitachi Amakaze</del>   | 41/12 | 122  | 0(11)    | 9(0)     | 9(0)     | 9(0)     | 9(0)     | 9(0)     | 9(0)     | 9(0)     | 9(0)     | 9(0)     | 9(0)     | 9(0)     | 9(0)     |
| 239  | <del>Hitachi (early)</del>   | 41/12 | 331  | 0(40)    | 32(0)    | 32(0)    | 32(0)    | 32(0)    | 32(0)    | 32(0)    | 32(0)    | 32(0)    | 32(0)    | 32(0)    | 32(0)    | 32(0)    |
| 240  | <del>Kawasaki (early)</del>  | 41/12 | 85   | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     |
| 242  | Mitsubishi Ha-31             | 41/12 | 245  | 45(0)    | 52(18)   | 52(18)   | 52(18)   | 66(60)   | 66(60)   | 66(60)   | 66(60)   | 66(60)   | 66(60)   | 66(60)   | 66(60)   | 66(60)   |
| 243  | Mitsubishi Ha-32             | 41/12 | 43   | 60(0)    | 96(14)   | 96(14)   | 96(14)   | 96(14)   | 96(14)   | 96(14)   | 96(14)   | 96(18)   | 96(18)   | 96(18)   | 96(18)   | 96(18)   |
| 244  | Mitsubishi Ha-33             | 41/12 | 111  | 65(0)    | 111(30)  | 111(30)  | 111(30)  | 111(30)  | 111(38)  | 111(38)  | 111(38)  | 111(38)  | 111(38)  | 111(30)  | 111(30)  | 111(30)  |
| 1930 | <del>Nakajima Ha-5</del>     | 41/12 | 101  | 7(0)     | 14(42)   | 14(42)   | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     |
| 1931 | Nakajima Ha-34               | 41/12 | 3    | 10(0)    | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 28(0)    | 28(0)    | 28(0)    | 28(0)    | 28(0)    | 28(8)    | 28(8)    | 28(8)    |
| 1932 | Nakajima Ha-35               | 41/12 | 167  | 180(0)   | 160(120) | 160(120) | 160(120) | 160(120) | 160(129) | 160(155) | 160(179) | 160(179) | 160(179) | 160(179) | 160(179) | 160(193) |
| 1934 | <del>Nakajima Hikari</del>   | 41/12 | 99   | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     | 0(0)     |
| 1935 | <del>Nakajima Kotobuki</del> | 41/12 | 254  | 25(0)    | 35(0)    | 35(0)    | 35(0)    | 35(0)    | 35(0)    | 35(0)    | 35(0)    | 35(0)    | 35(0)    | 35(0)    | 35(0)    | 35(0)    |

You might question below why I've added multiple factories... the answer to quickly come back into surplus.

| Base            | ID   | Engine            | Building | Action  | New   | Size | Notes                    |
|-----------------|------|-------------------|----------|---------|-------|------|--------------------------|
| Yokohama/Yokosu | 238  | Hitachi Amakaze   | 11       | Change  | Ha-33 | 30   |                          |
| Tokyo           | 239  | Hitachi (early)   | 40       | Change  | ha-32 | 30   |                          |
| Gifu            | 242  | Mitsubishi Ha-31  | 45       | Increas |       | 70   |                          |
| Nagoya          | 243  | Mitsubishi Ha-32  | 60       | Increas |       | 30   | 110 needed               |
| Nagoya          | 244  | Mitsubishi Ha-33  | 65       | Increas |       | 25   | 150 needed               |
| Utsunomiya      | 1930 | Nakajima Ha-5     | 7        | Change  | Ha-33 | 30   |                          |
| Maebashi        | 1931 | Nakajima Ha-34    | 10       |         |       |      | 28 needed                |
| Tokyo           | 1932 | Nakajima Ha-35    | 180      |         |       | 40   | 280 needed               |
| Tokyo           | 1935 | Nakajima Kotobuki | 25       | Change  | Ha-35 | 30   |                          |
| Yokohama/Yokosu | 1937 | NE turbojet       | 2        |         | Ha-35 | 30   | Late model engine change |

## Leader Assignment

Not sure who made this but looks good.

| Leader Selection            |                                          |       |            |          |          |                                |         |       |        |
|-----------------------------|------------------------------------------|-------|------------|----------|----------|--------------------------------|---------|-------|--------|
|                             |                                          |       | Leadership | Insp     | Naval    | Air                            | Land    | Admin | Agg    |
| Command                     | Combat                                   | HQ    |            | 3 ↑AV    |          |                                | 2 ↑AV   | 1 ↓FD |        |
|                             | Rear                                     | HQ    |            |          |          |                                |         | 1 ↓FD |        |
| Corps/Army                  | Combat                                   | HQ    |            | 3 ↑AV    |          |                                | 2 ↑AV   | 1 ↓FD |        |
|                             | Rear                                     | HQ    |            |          |          |                                |         | 1 ↓FD |        |
| Amphibious                  |                                          | HQ    |            |          |          |                                | 1 ↓D↑U  |       |        |
| Naval                       |                                          | HQ    |            |          |          |                                |         |       |        |
| Air                         |                                          | HQ    |            |          |          | 1 ↑#                           |         |       |        |
| Air Combat                  |                                          | TF    |            |          | 3 ↑ST    | 1 ↑#                           |         |       | 2 ↑R   |
| Surface                     |                                          | TF    |            |          | 1 ↑ST    | 3 ↑FP                          |         |       | 2 ↑R   |
| ASW                         |                                          | TF    |            |          | 1 ↑SUB   |                                |         |       |        |
| Bombardment                 |                                          | TF    |            |          | 2 ↑ST    | 3 ↑FP                          |         |       | 1 SCTF |
| Fast Transport              |                                          | TF    |            |          | 1 ↑ST    | 2 ↑FP                          |         |       |        |
| Transport / Replenishment   |                                          | TF    |            |          | 1 ↑ST    | 2 ↑FP                          |         |       |        |
| Mine                        |                                          | TF    |            |          | 1 ↑ST    | 2 ↑FP                          |         |       |        |
| Escort                      |                                          | TF    |            |          | 1 ↑STSUB | 2 ↑FP                          |         |       |        |
| CAP/Offensive Air           |                                          | Group | 3 ↑XP      | 1 ↑#↑M   |          | 2 ↑A2A                         |         |       |        |
| LB Offensive                |                                          | Group | 3 ↑XP      | 1 ↑#↑M   |          | 2 ↑#                           |         |       |        |
| Patrol, Transport, Training |                                          | Group | 2 ↑XP      | 1 ↑#↑M   |          |                                |         |       |        |
| CV                          |                                          | Group | 1 ↑XP      |          | 3 ↑T     | 2 ↑#                           |         |       |        |
| ASW                         |                                          | TF    | 1 ↑XP      |          | 2 ↑T     |                                |         |       |        |
| Combat                      |                                          | TF    | 2 ↑XP      |          | 1 ↑T     | 3 ↑FP                          |         |       |        |
| Non-Combat                  |                                          | TF    | 1 ↑XP      |          | 2 ↑T     | 3 ↑FP                          |         |       |        |
| SS                          |                                          | TF    | 3 ↑XP      |          | 2 ↑ASW   |                                |         |       | 1 ↑T   |
| LCU - Front Line            |                                          |       | 3 ↑XP      | 2 ↓FD↑AV |          |                                | 1 ↑AVXP | 4 ↓FD |        |
| LCU - Rear Area             |                                          |       | 1 ↑XP      | 3 ↑AV    |          |                                | 4       | 2 ↓FD |        |
| LCU - Refit                 |                                          |       | 3 ↑XP      | 2 ↓FD    |          |                                |         | 1 ↓FD |        |
| <b>KEY</b>                  |                                          |       |            |          |          |                                |         |       |        |
| ↓FD                         | Reduce Fatigue & Disruption              |       |            |          | ↑ST      | Increase Surprise, Cross T     |         |       |        |
| ↑AV                         | Influence Assault Value                  |       |            |          | ↑FP      | Float Plane Operation          |         |       |        |
| ↓D↑U                        | Reduce Disruption, Increase Unload Speed |       |            |          | ↑SUB     | Increase Chance of Finding Sub |         |       |        |
| ↑#                          | Increase # of Aircraft Flown             |       |            |          | SCTF     | Chance to Convert to SCTF      |         |       |        |
| ↑R                          | Increase React Chance                    |       |            |          | ↑#↑M     | Increase # & Morale            |         |       |        |
| ↑A2A                        | Increase Air 2 Air Results               |       |            |          | ↑XP      | Increase XP Gain               |         |       |        |
| ↑T                          | Increase Chance Locating Target          |       |            |          | ↑ASW     | Increase ASW Survival          |         |       |        |
| ↑AVXP                       | Increase AV, XP Gain, Firing Accuracy    |       |            |          |          |                                |         |       |        |

## Check List

| Day                          | Task                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          |          |          |        |                    |             |                     |                   |                     |                   |                   |            |                 |          |       |    |         |   |       |   |    |    |    |     |       |    |         |          |    |          |   |       |   |   |    |     |     |       |   |         |          |   |      |   |       |   |    |    |     |     |       |    |           |         |   |       |    |       |   |    |   |     |     |       |    |       |            |   |        |    |       |   |    |   |    |    |       |    |       |         |    |      |   |       |   |   |    |    |     |       |    |          |        |    |      |    |       |   |    |    |     |     |       |     |                              |         |    |       |    |        |   |    |    |     |     |        |    |                              |         |    |      |    |        |   |    |    |     |     |        |    |  |  |  |  |     |        |    |     |     |      |      |        |     |
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-|----|-----|-----|------|------|--------|-----|
| 1                            | <p>Go through each of the Bases with industry in Japan and increase supply req. to 4K+ (best to do this from the Industry Management screen – filter to Engines,Air, R&amp;D, Naval, Merchant &amp; Veh)<br/><b>Takes less than 5 mins ;-)</b><br/>Halt 240 Armament Production<br/>Increase each Vehicle Production to 30-40<br/>Increase a number of small Naval Shipyards to get an overall increase of 0-100<br/>Turn off Shinano (Maybe accel 3 * Unryu class CV's)<br/>Turn off 300 Merchant ShipYards<br/>Turn off all Merchant ships, except those currently building.<br/>Move Engineers to locations for Port expansions. (Strat move)<br/><b>Next TF(this will take about 30+mins) **numbers in braces are cargo loads.</b><br/>Send 12 Yusen – N to Toyahara (6555/(5785/300))*<br/>Send 6 Yusen – A to Kushiro (some will not be avail until after initial invasions(I've re-tasked 2 of them at Samah, 1 at Kwaj is not))(6010)*<br/>Send 27 Toho Cargo to Sapporo(3805/3525)*<br/>Send 28 Gozan to Hakkodate(2495/2310)<br/>Send 10 Kasu-D to Fusan (1865/1725)*<br/>Send 9 Lima to Keijo (6125)*<br/>Send 30 Aden to Shanghai (5040/4670)*<br/>Send 40 Akasi to Port Arthur(4050/3750) *<br/>Send 23 Lima to Port Arthur(6125)*</p> <p><i>Chart below should say Toyohara (Sakhalin) to Iwaki.</i></p> <table><tr><th>Pickup</th><th>DropOff</th><th>Distance</th><th>Class</th><th>Ships</th><th>Load</th><th>Min.No. of Convoys</th><th>Total Ships</th><th>Ship Fuel Use 1 way</th><th>Fuel Use Per TF/d</th><th>All TF Fuel Use/d</th><th>TF Tonnage</th><th>Remaining Ships</th></tr><tr><td>Toyahama</td><td>Iwaki</td><td>19</td><td>Yusen-N</td><td>3</td><td>17385</td><td>4</td><td>12</td><td>89</td><td>99</td><td>396</td><td>19200</td><td>45</td></tr><tr><td>Kushiro</td><td>Yokohama</td><td>15</td><td>Yusen -A</td><td>3</td><td>18030</td><td>2</td><td>6</td><td>73</td><td>132</td><td>264</td><td>20475</td><td>1</td></tr><tr><td>Sapporo</td><td>Hirosaki</td><td>8</td><td>Toho</td><td>9</td><td>31725</td><td>3</td><td>27</td><td>24</td><td>261</td><td>783</td><td>33075</td><td>26</td></tr><tr><td>Hakkodate</td><td>Ominato</td><td>2</td><td>Gozan</td><td>14</td><td>32340</td><td>2</td><td>28</td><td>4</td><td>168</td><td>336</td><td>33250</td><td>30</td></tr><tr><td>Fusan</td><td>Shimoneski</td><td>2</td><td>Kasu-D</td><td>10</td><td>17250</td><td>1</td><td>10</td><td>3</td><td>90</td><td>90</td><td>19000</td><td>36</td></tr><tr><td>Keijo</td><td>Fukuoka</td><td>11</td><td>Lima</td><td>3</td><td>18375</td><td>3</td><td>9</td><td>48</td><td>93</td><td>248</td><td>19425</td><td>37</td></tr><tr><td>Shanghai</td><td>Sasebo</td><td>12</td><td>Aden</td><td>15</td><td>70050</td><td>2</td><td>30</td><td>50</td><td>315</td><td>630</td><td>73125</td><td>159</td></tr><tr><td>Port Arthur (waypoint Moppo)</td><td>Fukuoka</td><td>15</td><td>Akasi</td><td>40</td><td>150000</td><td>1</td><td>40</td><td>55</td><td>880</td><td>880</td><td>147000</td><td>17</td></tr><tr><td>Port Arthur (waypoint Moppo)</td><td>Fukuoka</td><td>15</td><td>Lima</td><td>23</td><td>140875</td><td>1</td><td>23</td><td>66</td><td>744</td><td>713</td><td>140875</td><td>14</td></tr><tr><td></td><td></td><td></td><td></td><td>120</td><td>496030</td><td>19</td><td>185</td><td>412</td><td>2782</td><td>4340</td><td>505425</td><td>577</td></tr></table> <p>Remember to allocate ASW assets to each &amp; around Port / routes. Eg. Set ASW patrols from Tokyo to Ominato/Kurishiro<br/>Form TF at Resource locations and pickup initial Resources and send to Tokyo/Osaka for disbandment. This is to clear the ports and get some early Resources going.<br/>Convert some xAK to Patrol Craft. This can help with the ASW later. Make sure to check speed and ASW capability.<br/>Start expanding and changing Airframe parameters. (see list)<br/>Load turn into Tracker and determine Engine requirements, adjust accordingly. Actually, most of this probably has to be done turn 2 due to supply req.</p> | Pickup   | DropOff  | Distance | Class  | Ships              | Load        | Min.No. of Convoys  | Total Ships       | Ship Fuel Use 1 way | Fuel Use Per TF/d | All TF Fuel Use/d | TF Tonnage | Remaining Ships | Toyahama | Iwaki | 19 | Yusen-N | 3 | 17385 | 4 | 12 | 89 | 99 | 396 | 19200 | 45 | Kushiro | Yokohama | 15 | Yusen -A | 3 | 18030 | 2 | 6 | 73 | 132 | 264 | 20475 | 1 | Sapporo | Hirosaki | 8 | Toho | 9 | 31725 | 3 | 27 | 24 | 261 | 783 | 33075 | 26 | Hakkodate | Ominato | 2 | Gozan | 14 | 32340 | 2 | 28 | 4 | 168 | 336 | 33250 | 30 | Fusan | Shimoneski | 2 | Kasu-D | 10 | 17250 | 1 | 10 | 3 | 90 | 90 | 19000 | 36 | Keijo | Fukuoka | 11 | Lima | 3 | 18375 | 3 | 9 | 48 | 93 | 248 | 19425 | 37 | Shanghai | Sasebo | 12 | Aden | 15 | 70050 | 2 | 30 | 50 | 315 | 630 | 73125 | 159 | Port Arthur (waypoint Moppo) | Fukuoka | 15 | Akasi | 40 | 150000 | 1 | 40 | 55 | 880 | 880 | 147000 | 17 | Port Arthur (waypoint Moppo) | Fukuoka | 15 | Lima | 23 | 140875 | 1 | 23 | 66 | 744 | 713 | 140875 | 14 |  |  |  |  | 120 | 496030 | 19 | 185 | 412 | 2782 | 4340 | 505425 | 577 |
| Pickup                       | DropOff                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| Min.No. of Convoys | Total Ships | Ship Fuel Use 1 way | Fuel Use Per TF/d | All TF Fuel Use/d   | TF Tonnage        | Remaining Ships   |            |                 |          |       |    |         |   |       |   |    |    |    |     |       |    |         |          |    |          |   |       |   |   |    |     |     |       |   |         |          |   |      |   |       |   |    |    |     |     |       |    |           |         |   |       |    |       |   |    |   |     |     |       |    |       |            |   |        |    |       |   |    |   |    |    |       |    |       |         |    |      |   |       |   |   |    |    |     |       |    |          |        |    |      |    |       |   |    |    |     |     |       |     |                              |         |    |       |    |        |   |    |    |     |     |        |    |                              |         |    |      |    |        |   |    |    |     |     |        |    |  |  |  |  |     |        |    |     |     |      |      |        |     |
| Toyahama                     | Iwaki                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| 4                  | 12          | 89                  | 99                | 396                 | 19200             | 45                |            |                 |          |       |    |         |   |       |   |    |    |    |     |       |    |         |          |    |          |   |       |   |   |    |     |     |       |   |         |          |   |      |   |       |   |    |    |     |     |       |    |           |         |   |       |    |       |   |    |   |     |     |       |    |       |            |   |        |    |       |   |    |   |    |    |       |    |       |         |    |      |   |       |   |   |    |    |     |       |    |          |        |    |      |    |       |   |    |    |     |     |       |     |                              |         |    |       |    |        |   |    |    |     |     |        |    |                              |         |    |      |    |        |   |    |    |     |     |        |    |  |  |  |  |     |        |    |     |     |      |      |        |     |
| Kushiro                      | Yokohama                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| 2                  | 6           | 73                  | 132               | 264                 | 20475             | 1                 |            |                 |          |       |    |         |   |       |   |    |    |    |     |       |    |         |          |    |          |   |       |   |   |    |     |     |       |   |         |          |   |      |   |       |   |    |    |     |     |       |    |           |         |   |       |    |       |   |    |   |     |     |       |    |       |            |   |        |    |       |   |    |   |    |    |       |    |       |         |    |      |   |       |   |   |    |    |     |       |    |          |        |    |      |    |       |   |    |    |     |     |       |     |                              |         |    |       |    |        |   |    |    |     |     |        |    |                              |         |    |      |    |        |   |    |    |     |     |        |    |  |  |  |  |     |        |    |     |     |      |      |        |     |
| Sapporo                      | Hirosaki                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| 3                  | 27          | 24                  | 261               | 783                 | 33075             | 26                |            |                 |          |       |    |         |   |       |   |    |    |    |     |       |    |         |          |    |          |   |       |   |   |    |     |     |       |   |         |          |   |      |   |       |   |    |    |     |     |       |    |           |         |   |       |    |       |   |    |   |     |     |       |    |       |            |   |        |    |       |   |    |   |    |    |       |    |       |         |    |      |   |       |   |   |    |    |     |       |    |          |        |    |      |    |       |   |    |    |     |     |       |     |                              |         |    |       |    |        |   |    |    |     |     |        |    |                              |         |    |      |    |        |   |    |    |     |     |        |    |  |  |  |  |     |        |    |     |     |      |      |        |     |
| Hakkodate                    | Ominato                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| 2                  | 28          | 4                   | 168               | 336                 | 33250             | 30                |            |                 |          |       |    |         |   |       |   |    |    |    |     |       |    |         |          |    |          |   |       |   |   |    |     |     |       |   |         |          |   |      |   |       |   |    |    |     |     |       |    |           |         |   |       |    |       |   |    |   |     |     |       |    |       |            |   |        |    |       |   |    |   |    |    |       |    |       |         |    |      |   |       |   |   |    |    |     |       |    |          |        |    |      |    |       |   |    |    |     |     |       |     |                              |         |    |       |    |        |   |    |    |     |     |        |    |                              |         |    |      |    |        |   |    |    |     |     |        |    |  |  |  |  |     |        |    |     |     |      |      |        |     |
| Fusan                        | Shimoneski                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| 1                  | 10          | 3                   | 90                | 90                  | 19000             | 36                |            |                 |          |       |    |         |   |       |   |    |    |    |     |       |    |         |          |    |          |   |       |   |   |    |     |     |       |   |         |          |   |      |   |       |   |    |    |     |     |       |    |           |         |   |       |    |       |   |    |   |     |     |       |    |       |            |   |        |    |       |   |    |   |    |    |       |    |       |         |    |      |   |       |   |   |    |    |     |       |    |          |        |    |      |    |       |   |    |    |     |     |       |     |                              |         |    |       |    |        |   |    |    |     |     |        |    |                              |         |    |      |    |        |   |    |    |     |     |        |    |  |  |  |  |     |        |    |     |     |      |      |        |     |
| Keijo                        | Fukuoka                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| 3                  | 9           | 48                  | 93                | 248                 | 19425             | 37                |            |                 |          |       |    |         |   |       |   |    |    |    |     |       |    |         |          |    |          |   |       |   |   |    |     |     |       |   |         |          |   |      |   |       |   |    |    |     |     |       |    |           |         |   |       |    |       |   |    |   |     |     |       |    |       |            |   |        |    |       |   |    |   |    |    |       |    |       |         |    |      |   |       |   |   |    |    |     |       |    |          |        |    |      |    |       |   |    |    |     |     |       |     |                              |         |    |       |    |        |   |    |    |     |     |        |    |                              |         |    |      |    |        |   |    |    |     |     |        |    |  |  |  |  |     |        |    |     |     |      |      |        |     |
| Shanghai                     | Sasebo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| 2                  | 30          | 50                  | 315               | 630                 | 73125             | 159               |            |                 |          |       |    |         |   |       |   |    |    |    |     |       |    |         |          |    |          |   |       |   |   |    |     |     |       |   |         |          |   |      |   |       |   |    |    |     |     |       |    |           |         |   |       |    |       |   |    |   |     |     |       |    |       |            |   |        |    |       |   |    |   |    |    |       |    |       |         |    |      |   |       |   |   |    |    |     |       |    |          |        |    |      |    |       |   |    |    |     |     |       |     |                              |         |    |       |    |        |   |    |    |     |     |        |    |                              |         |    |      |    |        |   |    |    |     |     |        |    |  |  |  |  |     |        |    |     |     |      |      |        |     |
| Port Arthur (waypoint Moppo) | Fukuoka                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| 1                  | 40          | 55                  | 880               | 880                 | 147000            | 17                |            |                 |          |       |    |         |   |       |   |    |    |    |     |       |    |         |          |    |          |   |       |   |   |    |     |     |       |   |         |          |   |      |   |       |   |    |    |     |     |       |    |           |         |   |       |    |       |   |    |   |     |     |       |    |       |            |   |        |    |       |   |    |   |    |    |       |    |       |         |    |      |   |       |   |   |    |    |     |       |    |          |        |    |      |    |       |   |    |    |     |     |       |     |                              |         |    |       |    |        |   |    |    |     |     |        |    |                              |         |    |      |    |        |   |    |    |     |     |        |    |  |  |  |  |     |        |   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| Port Arthur (waypoint Moppo) | Fukuoka                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| 1                  | 23          | 66                  | 744               | 713                 | 140875            | 14                |            |                 |          |       |    |         |   |       |   |    |    |    |     |       |    |         |          |    |          |   |       |   |   |    |     |     |       |   |         |          |   |      |   |       |   |    |    |     |     |       |    |           |         |   |       |    |       |   |    |   |     |     |       |    |       |            |   |        |    |       |   |    |   |    |    |       |    |       |         |    |      |   |       |   |   |    |    |     |       |    |          |        |    |      |    |       |   |    |    |     |     |       |     |                              |         |    |       |    |        |   |    |    |     |     |        |    |                              |         |    |      |    |        |   |    |    |     |     |        |    |  |  |  |  |     |        |   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| 19                 | 185         | 412                 | 2782              | 4340                | 505425            | 577               |            |                 |          |       |    |         |   |       |   |    |    |    |     |       |    |         |          |    |          |   |       |   |   |    |     |     |       |   |         |          |   |      |   |       |   |    |    |     |     |       |    |           |         |   |       |    |       |   |    |   |     |     |       |    |       |            |   |        |    |       |   |    |   |    |    |       |    |       |         |    |      |   |       |   |   |    |    |     |       |    |          |        |    |      |    |       |   |    |    |     |     |       |     |                              |         |    |       |    |        |   |    |    |     |     |        |    |                              |         |    |      |    |        |   |    |    |     |     |        |    |  |  |  |  |     |        |    |     |     |      |      |        |     |
| 2                            | <p>-Go back through turn 1 checklist and do those items still pending due to inadequate supplies (turn1). Particularly airframes and engines.<br/>-Recheck supplies at bases for repairs (&gt;10K)<br/><i>Time to tackle Shipping. I prefer doing this on turn2 as I've seen settings change when done on turn1 &amp; it's 1<sup>st</sup> turn is busy enough.</i><br/>-Accelerate 3 * Unryu CV's<br/>-Turn back on TK and AO ships, accelerate some that are not in building mode.<br/>-Determine which ships you want based on conversions, size, efficiency.<br/>- I like some Std-A, all xAP, all AP,<br/>- Check your HI surplus. <b>Probably fell due to large changes and expansions.</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          |          |          |        |                    |             |                     |                   |                     |                   |                   |            |                 |          |       |    |         |   |       |   |    |    |    |     |       |    |         |          |    |          |   |       |   |   |    |     |     |       |   |         |          |   |      |   |       |   |    |    |     |     |       |    |           |         |   |       |    |       |   |    |   |     |     |       |    |       |            |   |        |    |       |   |    |   |    |    |       |    |       |         |    |      |   |       |   |   |    |    |     |       |    |          |        |    |      |    |       |   |    |    |     |     |       |     |                              |         |    |       |    |        |   |    |    |     |     |        |    |                              |         |    |      |    |        |   |    |    |     |     |        |    |  |  |  |  |     |        |    |     |     |      |      |        |     |

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|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | Load Turn in Tracker and have a look at Merchant Shipyard requirements adjust Shipyards accordingly.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 4 | <p>Engineer LCU's should be about to arrive at Ports for expansion. Make sure they go back to combat mode and check that you've clicked expand Port.</p> <p>Look at the start locations for your convoy runs. Are any ready to be formed yet? Set them for load Res, set destination and change the mode to CS.</p> <p>Start looking at the start locations for your convoy runs. Are any ready to be formed yet? Probable these:</p> <ul style="list-style-type: none"> <li>-Toyohara#1 - 3+escort CS Res - Iwaki</li> <li>-Fusan#1 – 10 + esc CS Res Shimoneski</li> </ul> <p>Some of those Yusen-A are probably done landing troops, send them to Kushiro with ASW escort.</p> |
| 5 | <ul style="list-style-type: none"> <li>-Sapporo#1 - 3+escort CS Res -&gt;Hirosaki</li> <li>-Toyohara#2 - 3+escort CS Res - Iwaki</li> <li>-Shikuka #1 – 2tk+escort CS Oil -&gt; Wakkanai</li> <li>-Kiejo#1 – 3+esc CS Res -&gt; Fukuoka (waypoint Moppo)</li> <li>-Shanghai#1 – 15+2 esc -&gt; Sasebo</li> </ul>                                                                                                                                                                                                                                                                                                                                                                  |
| 6 | <ul style="list-style-type: none"> <li>-Sapporo#2 - 3+escort CS Res -&gt;Hirosaki</li> <li>-Toyohara#3 - 3+escort CS Res - Iwaki</li> <li>-Kiejo#2 – 3+esc CS Res -&gt; Fukuoka (waypoint Moppo)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |