

Compilation of Game Knowledge

This is a compilation of things that I have seen new players not know of. The community takes credit for discovering these, I am just gathering them here. It is up to you however you want to use this information. If you have any concerns or I missed something contact CosmicArcher#3214 in the [GFEN](#) discord.

Warning: I will be making use of gifs and images a lot.

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UI and Non-Combat

Logistics Resource Output Display

Pressing the triangle beside your current logistics teams deployed count in the upper right swaps the display from total resources to resource / hour or vice versa.



Day or Night Campaign Map Without Entering (until Deep Dive)

When doing campaign stages that are using the old format (UI for mission selection is the same as the story chapters), you can check whether the map is day or night from the UI though it is hard to spot unless pointed out. Later events do not have this

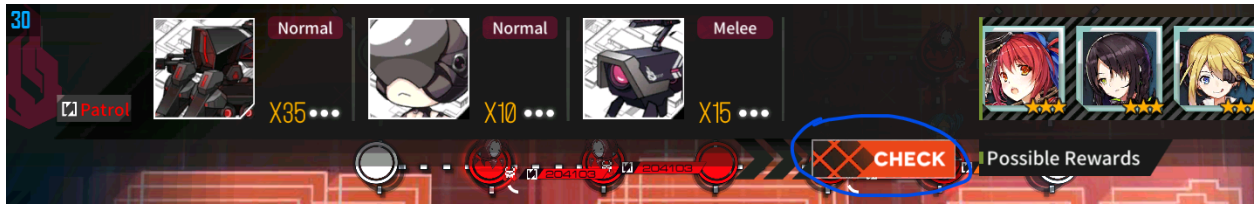


Chapter 3 of Deep Dive, those with the midnight tag are night missions, the rest are day

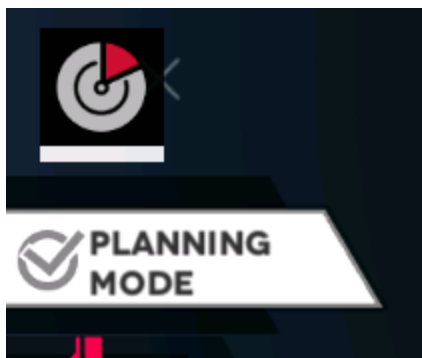
Seeing the Composition of an Enemy on the Map and its Drops

Holding on an enemy on the map will reveal the number of different enemy types are in it and shows its drop list that scrolls from the highest rarity to lowest rarity drop and the check button shows you the exact positions of the enemies if you fight them.

Alternatively, you can tap on the radar icon just above the planning mode button to only need to tap on them to do so but in that mode you cannot command your own echelons so you have to tap it again to toggle the mode off.



Composition and drop list of the first fight in the 12-4e drag route and the check button to see their starting positions if you fight.



The button that toggles the mode to view enemy comps.

While this is told to you by the game if you looked at the bottom of the Reward List tab, I have seen some players still not know this. If you go to the Reward List tab within Combat Summary and tap on a drop like it says at the bottom, all enemies that have the drop will glow on the map provided you can see them.

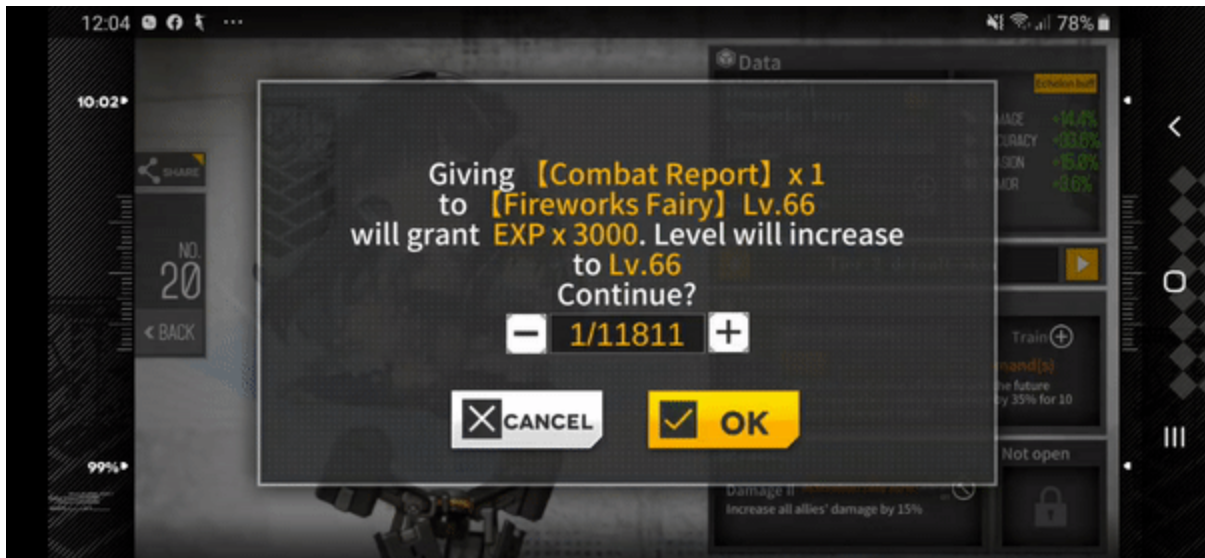


All enemies that drop PK in 0-2

Using Large Amounts of Gift Items

Instead of repeatedly tapping to increase/decrease the amount of combat reports/affection items you will give the doll, you can hold on the buttons instead and it will slowly accelerate reducing the time you need to spend getting the amount you want. If you want to use the max amount, pressing '-' when at 1 will instantly bring

you to the max amount you can use.



When holding down on the button, there is a slight pause before it begins accelerating.

Time Left For Current Event

Since a lot of players keep asking how much time is left in the event, if you look for the event in the newsbox in the bottom left, you can see how much time is left in the event.



Time left for Photo Studio Mystery event as of 3/30 21:30

Minimizing Resource Usage When Testing Teams In Ranking

When doing ranking, you cannot lose. The terminate button is replaced by combat settlement which means that all your teams will retain their supply. Although in the mission select screen it says terminate, doing so will still retain the supply of all of your teams. When testing a team for ranking, when you are satisfied with the tests you can close the game before the fight ends and then terminate from the mission select screen to not spend any supply from that fight. Essentially free testing of your team.

Illumination Fairy's Vision Increase

While it does say it in the skill description, some players are still unaware that Illumination Fairy's skill stacks with the vision range provided by a HG at night. You can see farther when you have both in the team and please do not think of using Illumination as a substitute for HGs at night.

Shortcuts to Gifting, Linking, and Enhancing menus

Instead of putting the doll in an echelon that has a dorm to gift her combat reports or affection items, you can access those from her page. You can also go through that to enter the factory to enhance/link her. The buttons also exist on the older client but the + buttons blend in with the background so it is a bit harder to see.



Location for the shortcuts when applicable

Combat XP Gain

Base XP (to be increased by link xp bonus) gained after winning a battle is a fixed amount that all fights in the map share, regardless of the difficulty of each battle, you will earn the same amount of XP from them. The last mob in night maps and bosses give double the base XP. Maps have a penalty for any doll above a certain level.

“Bonuses” For Linking Dolls

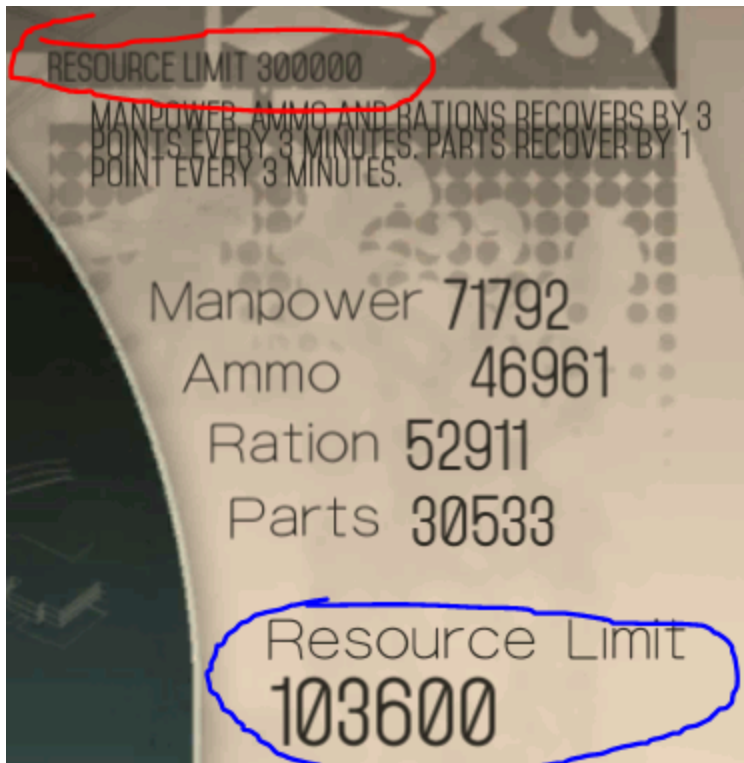
Linking dolls will repair her to full HP and fully resupply her for free. She also gets an XP multiplier where combat XP gained is multiplied by $0.5 + 0.5 \times \text{number of links}$.

Friend Battery Amount

When visiting a friend's dorm and collecting batteries from them, the amount of batteries you gain is the number of dorms they have.

Resource Hardcap and Softcap

When you are below the softcap you will earn 3 non parts per 3 minutes and 1 part per 3 minutes. Your softcap is determined by your commander level. GFLCorner made a [chart for how softcap increases every level](#). The hardcap for resources is 300k always and when you exceed that, you cannot earn anymore of that resource from logistics, only from quest rewards and buying resources with gems.



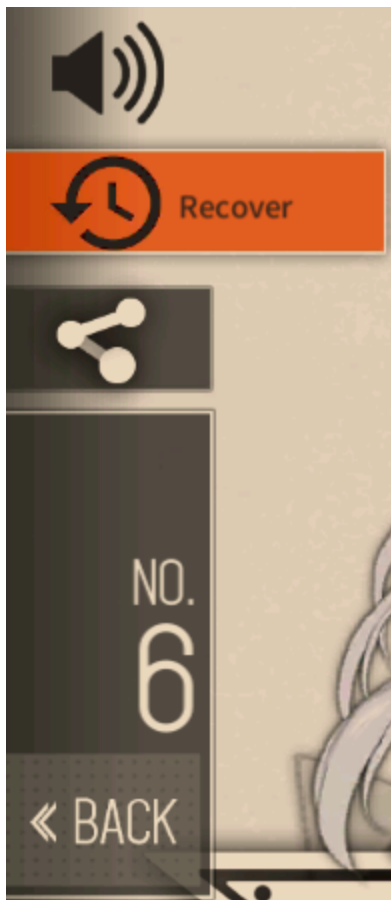
Hardcap (red) and softcap (blue) as seen in the right of the commander profile

Data and Memory Fragments Hardcap

Data and memory fragments are capped at 9999, you cannot earn more through doing their respective simulations. You can only exceed that by purchasing them from packages or through rewards.

Recovery

When you have retired a doll before and change your mind, you can recover her from the index, going to her page, and pressing the recover button. You can only recover a doll if you have registered her in your index (you had the doll at some point in the past) and you have 0 copies of her in your armory currently. Unfortunately equipment cannot be recovered so make sure to **lock your special equip** to avoid accidentally foddering them.



Oathing Fully Repairs Dolls

When oathing a doll, it will also fully repair her and it can be done while the echelon is deployed which is where it is usually used in rankings. Naturally this can only be done once per doll and you will have to be a whale to treat oath rings like that.

Pet Type Influence on Expeditions

When going on expeditions in the forward basecamp, you have equal chances for going into the 4 areas with 0 pets sent. Adding pets increases the chance of going to a certain area while reducing the chance of going to others.

Dogs: Snowfield

Cat: City

Bird: Forest

Others: Wasteland

Quest Shortcuts

When doing quests like your dailies or events like Bingo or Point events, some quests have a shortcut marked “move to” instead of “progress” that when pressed, will take you to where you need to be to complete the quest.



Quest shortcut, notice how it does not say progress like others

Timers

The time zone the game uses is UTC -8, any times I state here are in that time zone.

Fairy Commands

Fairy commands regenerate every 6 hours at 4:00, 10:00, 16:00, 22:00 and the timer does not stop when your commands are full.

Friend Batteries

Up to 10 friends can collect batteries from a player per reset. There are 2 resets per day, 12 hours away at 3:00 and 15:00 allowing a player to give up to 20 unique friends some batteries.

Daily Kalina Gift

The daily gift from Kalina arrives at 4:00.

HOC Listening Post

The passive sample generation is every 8 hours at set times and appears to be different depending on the player.

Start of the Week

The week starts on Mondays. This is important for the weekly quests refresh and the weekly share refresh.

Ranking Leaderboard Update

The ranking leaderboard updates at around 5:00.

Combat

Savescumming

One of the most useful tricks you can do regarding combat is to close the game before the fight finishes to “retry” it in case you messed up or to practice the fight more.

When re-entering the map after a savescum, you can quickly tap the fairy auto skill to turn your combat fairy’s skill on/off if you forgot to use/not use it before entering the fight.

Changing Fairy Talent RNG Seed (obsolete with 2.06 client)

Fairy talent activation can be changed after a savescum. The most reliable way of resetting the RNG seed is to gain commander XP (autobattles, collecting quest rewards) before re-entering the battle.

Team Range

Your dolls have a shared range determined by whether the front column is occupied/a doll is moving to occupy it or not. Having only the back column occupied with 3 or less dolls has the same range as having the middle column occupied as well. Even if the doll has not yet reached the front column, as long as she has been ordered to move there your range will extend to the maximum amount.



The team’s range extends fully even if DP-12 has not reached the front column. As long as she is ordered to move there the change is complete and immediate.

Target Resetting

Dolls will stay on their target until it dies, goes out of range, or they are forced to retarget. To force a doll to retarget, you move them then quickly move back, when she stops she will update her target.



Lee shoots the Aegis initially, then when I move her briefly to cause her to update her target, she starts shooting the Nemeums instead of finishing off the Aegis which would have happened had I not moved her.

Stopped Range

Both your team's and the enemy units' range extends slightly when not moving so you have to be aware of that when kiting and not stop them when they're close to you already as you may still be in range when you move back into position.

First Shot Delay

Kiting relies on delaying the enemy's shots as much as possible but the time to shoot after stopping depends on how long they have been standing still previously and how long they have been walking between the previous stop and the current one. This delay applies to our dolls as well so combined with the extended range of having the echelon stopped, you might find it useful at times to just wait for the enemy to come to you instead of walking towards them.

HOWEVER



Visualization, you do not want to kite the mob again while its “bar” is still close to empty.

Source: <https://gall.dcinside.com/mgallery/board/view/?id=micateam&no=1438980>

Retreat Invulnerability

When a doll retreats, she cannot receive damage from anywhere.

Heavy Damage Invulnerability

When a doll's HP falls below 30% of her maximum HP, her HP is set to 30% of her maximum HP and she becomes invulnerable to all damage for 1.5 seconds.

Link Protection

A doll's current HP is represented as their HP per link x (number of links - 1) + remaining HP of the last link. When dolls (and enemies) take damage, only the last link takes damage and when a hit deals more damage than the link's remaining hp, the overkill damage will not transfer over to the next link. AoE attacks like grenades splash damage to each link, and then reduces HP by that amount and kills the appropriate amount of links.



Uzi has twice as much HP as SAA yet both lost exactly 3 links since Jupiter hits do not splash across links (but can hit multiple dolls). If you add up the damage numbers the Jupiters did, it is way more than the HP the dolls actually lost, this is the power of link protection. You can also see heavy damage invulnerability kick in here.

HP Shield Against Attacks That Splash Links

Attacks that splash links are dangerous for healthy targets but when the target has a shield, they count as having only one link so the attack does not splash at all. This is useful when fighting enemies like Doppelsodners as getting an HP shield makes it do a lot less damage.

Corpse Whipping

When multiple dolls shoot a target with low enough HP that only one of them is needed to kill it, the shots of the other dolls get wasted as they hit a corpse instead of another enemy. This is a problem if your targets have low hits-to-kill for your DPS where the ratio of wasted shots to total shots fired is larger. To avoid this you want your DPS to fire at different intervals.



AR-15 without skill and AN-94 shoot at the same against mobs that only need 1 hit to kill, wasting AN-94's bullets. While I would like to credit the creator it seems their name has been lost through time.

Enemies Are Elite Until They Stop Once (obsolete as of March 30, 2021 maintenance, non-perma elites are now non-elite from the very beginning)

All enemies, whether they be Vespids or Doppelsodners, are elite until they stop once. This means that Carcano M91/38's skill (otherwise known as Grape or Purple) does not do huge damage and Kar98k's skill will prioritize them unless they have stopped once. While all enemies are elite until they stop, not all lose that status such as Uhlans which we refer to as perma elite.

Some enemy compositions with Hydras feature an enemy that will make the Hydras stop at the start of the fight for you. It is not always there and the only indicators for its existence are 9999 damage numbers on the far right of the battle without you shooting yet.

MG RoF

MGs are not affected by RoF in the same way as the other classes, rather than it affecting how fast they shoot, it affects their reload duration. MGs fire at a fixed number of frames per attack:

Big 4 (PKP, PK, MG5, M2HB): 11 frames per shot (2.7273 shots per second)

Others: 10 frames per shot (3 shots per second)

Holding Bullet Time While Retreat Kiting

We know that if you hold a doll, you activate bullet time. After doing that, if you hold the withdraw button all you have to do is release it to retreat and as long as you do not release your finger that was on the doll, you will remain in bullet time afterwards. If you change your mind about retreating, just slide your finger off of the withdraw button before releasing. When using an emulator, you will have to use keybinds since you only have one cursor, and since you cannot slide a keybind, you will need another keybind on the pause button to safely release the withdraw button without retreating your doll.



When the withdraw button darkened, that was when my other finger was holding that area, when it lightened up again briefly was because I slid my finger off of the button for a while. When I released, bullet time did not stop until I released the finger that was holding AS Val previously.

Skillshots

When a skill launches a special attack like a grenade or charged shot, that attack does the following unless stated otherwise in the skill description:

- Cannot miss
- Cannot crit
- Ignores armor

M4 mod2 skill's direct hit happens to do the above except it is affected by armor, the explosion on the other hand can miss, can crit, and is affected by armor.

Tiles and Skills

Tile buffs will stay regardless of whether the doll providing them moves/retreats/dies. Skill buffs/debuffs will stay for the entire duration regardless of whether the doll that applied them dies/retreats with the exception of deployables like smoke and molotovs that disappear when the caster retreats/dies.

Tile-based skills will move the area it will affect with the doll so be careful when using dolls with tile-based skills in fights that require you to move dolls out of position. When a doll is moving, they are inside a tile if a link or so are inside the tile so it is possible for her to receive multiple buffs from a tile based skill by being inside multiple affected tiles at the time of activation. With tile-based skills you can also have multiple dolls pass by the tiles affected and they will all receive the buff.



Since both Dorothy and P90 were “inside” the tile in front of MDR, both received the shield.

Skills Cannot Activate While Moving

When a doll is moving, she cannot activate her skill until she stops. Skills with a delayed secondary effect like Howa Type 64’s skill and those that could trigger from external sources like Python’s passive will not take effect until the doll stops moving.

Map Advantaged Bonus

Dolls that are advantaged in the map receive a 20% stat buff that helps with the job of their class.

AR, RF, MG: 20% FP

HG, SMG: 20% eva

SG: 20% armor

Shield HP Display

HP shields are displayed as a white bar under the HP bar of the doll. The percent of the bar that is filled up depends on the current HP of the shield and the highest HP the shield was in at any moment in the past assuming the last shield expired rather than reaching 0 HP. If the last HP shield is destroyed rather than timed out, the highest shield HP attained resets.

Shield Stacking

When multiple HP shields are applied on a doll, the durations of the different shields remain separate and the oldest shield takes damage first regardless of whether newer shields will expire first.

Numbers

Manpower Deploy Cost

The manpower cost to deploy an echelon is 2 x the total number of dummy links in the echelon.

Core Cost To Link

When linking a doll you can choose to use dupes or use cores to replace the dupe. The core cost to replace a dupe is determined by the doll's rarity:

1*(collab dolls): 15 cores

2*: 1

3*: 3

4*: 9

5*: 15

The number of dupes needed to link a doll depends on how many links she will upgrade to:

x2(unlocked at lv10): 1 dupe

x3(unlocked at lv30): 1

x4(unlocked at lv70): 2

x5(unlocked at lv90): 3

Skill Data Cost

Skill Level	Dolls (Strategic Fairies x 2)	Combat Fairies and HOC skill 1 (skill 2 and 3 half)
2	100 (200) basic	200 (100) basic
3	200 (400) basic	400 (200) basic
4	300 (600) basic	600 (300) basic
5	120 (240) intermediate	200 (100) intermediate
6	200 (400) intermediate	400 (200) intermediate
7	300 (600) intermediate	600 (300) intermediate

8	400 (800) intermediate	200 (100) advanced
9	200 (400) advanced	400 (200) advanced
10	300 (600) advanced	600 (300) advanced

Enhancing Equipment

The cost to enhance equipment is based on the amount of XP gained so using 2 white fodder costs as much as using 1 blue fodder or a universal part. The amount of each of the 4 resources per XP gained depends on the type of equipment being enhanced. Special Equipment takes 3x as much XP to enhance but takes slightly more than 3x the resources. Feeding equipment with fodder that has the same name (same rarity, type, and 16-lab or not for gold) will grant 3x the XP value.

Logistics Great Success Chance

Logistics great success chance is dependent on the average level of the dolls (fairies do not affect it please remove them before sending the team out) in the echelon (do not put lv1 dolls in if you do not need to as they will drag the average down, just leave the slot blank). The chance has two portions, the base amount and the amount that is dependent on the average level.

Great success chance normal:

$$15\% + 0.45\% * \text{average level}$$

Great success chance up event:

$$30\% + 0.60\% * \text{average level}$$

Hit Chance

The hit chance is determined by this formula:

$$\text{attacker's acc} / (\text{attacker's acc} + \text{defender's eva})$$

There is a minimum hit chance of 3%. If the target has eva, it is impossible to guarantee hits unless the attack is from a skill that cannot miss. A buff multiplier to the attacker's acc is equivalent to multiplying the defender's eva by the reciprocal of that buff multiplier. Ex. A 2x acc multiplier(+100% acc) on the attacker has the

same effect on hit chance as a 0.5x eva multiplier(-50% eva). HOC pierce damage cannot miss and the direct damage has a minimum hit rate of 40% and does not suffer night penalty. 8 Precision roughly equals 1 acc stat.

HOC Chip XP Carryover

When using an enhanced chip as fodder for another chip, 80% of the XP stored inside it from being enhanced will be transferred over as well but it is not affected by the 20% bonus for enhancing a chip of the same color as the fodder.

HOC Armor Penetration Stat

The armor penetration stat of a HOC is determined by their type.

ATW (BGM-71, AT4): 400

AGL (AGS-30): 80

MTW (2B14): 40

Reload Time(MGs)

The reload time for MGs is determined by their RoF stat but not significant enough to make RoF buffs good for MGs. This is the formula in seconds:

$$4 + 200 / \text{RoF}$$

Reload Time(SGs)

The reload time for SGs is different in that it does not rely on RoF but on their clip size instead. The formula in seconds is:

$$1.5 + 0.5 * \text{clip size}$$

Affection

Dolls get a boost (or demerit) in base stats depending on her affection (rounded up):

Less than or equal to 10 affection(pls stop letting her die): -5%

Greater than or equal to 90: +5%

Greater than or equal to 140(oathed): +10%

Greater than or equal to 190(oathed + mod3): +15%

Fairy Aura

Fairies provide a passive stat boost to your dolls which are multipliers to the respective stats after equipment and affection bonus are applied. The result is rounded up which is why you can see M16 have 1 more armor than her equipped armor equipment provides even with a miniscule armor aura on the fairy when you turn on show equip in the formation menu. The aura is determined by the level and rarity of the fairy. The rarity determines what percentage of the full stat it will have, 40/50/60/80/100% of the full stat for 1/2/3/4/5*.

$\text{Stat} * \text{aura multiplier rounded up}$

Tiles

As clearly shown by the display in the formation preset menu, tiles stack additively onto each other. Tiles are a multiplier to the doll's stat, even M4's 30% crit rate tiles are a multiplier of 1.3x, it does not give your ARs +30 crit rate even if crit rate is a percentage.

$\text{Stat} * (1 + \text{sum of tiles})$

Skill Buffs/Debuffs

Skills are a multiplier to the doll's stat. That multiplier is equal to 1 + the buff amount (debuff multiplier is 1 - debuff amount). With multiple skills that buff the same stat, they stack multiplicatively (the stat is multiplied to the product of the different skills' multipliers). Skills that stack multiple times like Negev's Frenzy or Fervor fairy talent stack multiplicatively onto itself.

$\text{Stat} * \text{product of skill multipliers}$

Night Acc Debuff and PEQs

When doing night missions, all dolls receive a 90% acc penalty that can only be reduced by equipping a PEQ on **every doll that needs it** (equipping PEQ on one doll does not grant the entire team night vision). The formula is:

$$\text{Acc} * (1 - (0.9 * (1 - \text{night vision}))) \text{ or} \\ \text{Acc} * (0.1 + 0.9 * \text{night vision})$$

RoF to Attacks Per Second

RoF is converted to frames per attack which gives us the seconds per attack, the reciprocal of which is attacks per second. The game measures time in frames and we convert it into seconds by dividing the amount by 30 (because combat runs in 30FPS). RoF has a hardcap which is said by the game in the formation preset but the effective cap is lower because lower RoF values have the same frames per attack (116 and 120 (RoF cap for non SGs and MGs) have the same frames).

RoF to frames per attack formula:

$$1500 / \text{RoF rounded down}$$

Frames per attack to attacks per second formula:

$$30 / \text{frames per attack}$$

Because of the possibility for multiple RoF values to be the same frame, you will not always see faster shots unless you cross the next breakpoint, the RoF needed to reduce the frames per attack.

HOC Reload to RoF (can be inaccurate at times)

A HOC's seconds per attack (not attacks per second) is already shown by the game right beside the reload stat in the HOC's page. This will only be useful in seeing how close your HOC is to the next breakpoint.

$$10 + \text{Reload} / 30 \text{ rounded up}$$

Do note that this sometimes fails around multiples of 30 so I would trust the in-game display instead.

Damage Determination

I will be simplifying this, for a more detailed explanation regarding this and stat calculation, consult the [thesis of 25thNight](#). The forceshield portion is outdated, that was from a time when forceshields gave a percent chance to dodge rather than the current percent damage reduction. I believe that with that change it should be around the “Settle damage increase/reduction effect” along with other damage reduction effects.

Damage Variance

Most attacks are subject to damage variance where it can hit for +/- 15% more/less damage. Each bullet is subject to a different value of damage variance hence why it is uncommon for multiple shots from the same doll to deal the exact same amount of damage.

Armor and Armor Penetration

Armor reduces damage (post damage variance) by a flat amount, up to a minimum of 1 damage, and armor penetration reduces the amount of effective armor and when $AP > \text{armor}$, the doll deals bonus “overpenetration” damage up to a maximum of 2. All dolls have a base AP stat of 15 so they do +2 overpenetration damage always against unarmored.

$$\text{Armor} - AP = \text{Effective Armor (up to a minimum of -2)}$$

$$\text{Damage} - \text{Effective Armor} = \text{Final Damage (up to a min of 1)}$$

Critical Damage

Crit damage is applied after armor (if the hit crits of course) so crit damage buffs are less effective than FirePower buffs with the same multiplier when you cannot fully penetrate armor. All dolls have a base crit damage stat of 150%. Thankfully enemies cannot crit so they skip this step.

$$\text{Damage} * \text{crit damage} * \text{crit damage buff multipliers if any}$$

Damage Increase/Decrease Effects

Skills like Contender's or enemy forcesshields which increase/decrease the amount of damage taken by the target are applied to the result.

$$\text{Damage} * \text{damage increase/decrease multiplier}$$

HP Shield

The resulting damage is then applied to the target's HP shield if it has any before doing damage to the HP of the target.

Single Target Damage

If the damage dealt is greater than the target's HP shield (or if the target has none), check whether the leftover damage is greater than the remaining HP of the target's last (injured first) link, final damage cannot be greater than that value.

$$\text{Damage or last link's HP, whichever is smaller} = \text{Final Damage}$$

AoE Damage

If the damage dealt is greater than the target's HP shield (or if the target has none), multiply the leftover damage with the number of links the target has. Think of it as hitting each link of the target and directly reducing the target's HP but the last hit is subject to link protection if the damage is greater than the injured link's HP. This step being after HP shields is why being shielded treats dolls as having only 1 link against AoE damage.

$$\begin{aligned} &\text{Damage} * (\text{number of links} - 1) + \\ &\text{damage or last link's HP, whichever is smaller} \\ &= \text{Final Damage} \end{aligned}$$

Links to Guidemakers and Useful Tools

Guidemakers

DMesse: <http://dmesse.egloos.com/3568507>

GFC: <https://www.gflcorner.com/>

GamePress: <https://gamepress.gg/girlsfrontline/>

Matsuda: <https://gfl.matsuda.tips/>

Useful Tools

DPS simulator, battery calculator, craft timers: <http://brainlets.moe/gf/>

DPS simulator, HOC chip calculator, leveling calculator (use the Chinese version if the English version fails to work and just use google translate):

<https://hycdes.com/pages/index-EN.html>

HOC chip calculator (exe file, open source):

<https://drive.google.com/drive/folders/1jNoFLZY37upCWqEOe8wgOBivnHWrbTwL>

Source code:

<https://github.com/Bunnyspa/GFChipCalc/releases>

Crafting statistics(voodoo with data on results), craft timers: <https://gf-db.github.io/>

Logistics calculator, (links at the bottom) 8-1N Zas drag checker, 13-4 vector drag checker, Moon furniture (expedition shop furniture used for drawing) placer :

<https://tempkaridc.github.io/gf/>

Enemy initial positions in maps and their stats database:

<https://hometehomete.com/en/maps/>