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General

- Check for entering inputs one frame earlier at the start of some battles
- Check running into buildings
- Check the delays during Cut usage. They didn't seem to be completely consistent
- Is it faster to evolve the Jigglypuff, or find one more catch somewhere?
 - Evolving Jigglypuff is faster as long it either lands directly in the party after being caught, or if there is sufficient time to kill before the Clefairy

Squirtle's Move Order

- Before we are finished using Squirtle, move Bubble into slot 2 (switch with Tail Whip) during a battle. It will (probably) save frames when it comes time to teach HMs
 - I think this movement actually costs more frames than it saves. Need to confirm this

Bug Catcher Sammy

- Needs to be manipulated into 3 Poison Stings with no poisoning and maybe 1 crit, and 3 Tackle crits with sufficient damage ranges (Weedle has 26 HP, Tackle-crit is 5/16 to do 8 HP, 10/16 to do 9 HP, 1/16 to do 10 HP)
- Current route works around Turn 1 String Shot, poisoning on turn 1, poisoning on turn 2, help menu on turn 2 for crit manipulation (due to no quicker crits), Poison Sting crit during turn 2 refinement

Viridian Forest/Pewter Mart

- It might be faster to pick up a second Potion in the Forest instead of the Antidote (then sell both Potions)
 - It is.

SS Anne

- ~~• Is it faster to get the Great Ball before Boat Rival?~~
 - Not getting that Great Ball. We have enough to get by

Route 5

- ~~Catch Meowth for Pickup? Maybe use the one on Sevii instead. There are PP Ups to be had~~

Rock Tunnel

- Find 2 more balls or another Repel somewhere. There are too many encounters
 - ~~Maybe buy 1 fewer escape rope in Pewter, and pick up the extra escape rope in Rock Tunnel~~
 - This should be fixed with the new money routing

Pokemon Tower

- Switch Water Pulse and Mega Punch during Rival fight, then switch back later on

Erika

- All 3 of her Pokes need crit mega Punches, but crits were super-scarce at that section of the RNG. If that is still the case after re-routing, it may be necessary to use a PP Up on Mega Kick and kick one of her team. Or else get the Tea before going to the gym

Safari Zone

- Need to implement the spinning movement for the rest of the catches (and possibly in other sections?)
- Need to re-optimize movement a little

Strength/Surf Menu

- There are a lot of things to be done in the Items menu. The movement needs to be optimized
- If we wind up keeping the PP Ups on Mega Kick, should we move Mega Kick to slot 1 for this menu? It could be done during Koga, since we have to use MK, need to switch between slot 1 and 4 a couple times, and grind 4 crits anyway
 - It looks like not moving the move before hand makes the menuing here take an extra 12 frames
 - How will the different move slots affect the Blaine menuing? I know the moves need to be shuffled anyway to prepare for teaching Metronome
- Still working on routing whether Return is worth the time investment. If so, this is one of two good options to teach it (the lesser option is the menu when teaching Fly)

Bond Bridge

- Pick up Max Repel for use in Victory Road (Super Repel wears off too fast)
 - Probably don't need this after all, especially if we just repel all the way through Rock Tunnel (since all Rock Tunnel encounters are also in Victory Road)

Postgame

- Lag reduction in postgame fly menu by moving left on the first move to get the cursor off of Kindle Road
- In the menu to sail to four island, you can press Up to loop to the bottom of the menu to select Four island
- After completing the postgame, is it actually fastest to fly back to five island to boat back to one island?

Dotted Hole

- For the up, left, and right holes, it is 30 frames faster per hole to get off of the bike before falling (avoiding music reloading, I think?)
- For the down hole, it is 3 frames faster to run instead of biking before the final hole

Five Isle Meadow

- It took 213 frames to use a Repel (might be faster if done earlier, maybe from an escape rope menu). It wound up being faster to take a longer route and avoid encounters
 - Need a granular breakdown of the repel menu timing for the most recent escape rope

Indigo Plateau

- What are the numbers on depositing/not depositing Pokes before E4R1? Before E4R2?

Future Research

- Maniping the seed for the restart to get better Metronome RNG in the postgame fights
- Return over Mega Punch at some point? Or over Fire Blast late in R2?

Leaf Green

Squirtle Notes/Rival 1

Rival 1's Bulbasaur has the following stats (Impish nature-> +Def, -SpA):

HP	19
ATK	9
DEF	9
SPA	9
SPD	11
SPE	9

- We are only taking Squirtles with +SpA nature

Speed Notes

The below table shows who wins the Speed matchups between Squirtle and the 11 Pokemon that it fights, for the different natures and Speed IVs for Squirtle (Note: this table assumes the fairly standard battle routing of Rival 1, Bug Catcher Sammy, Brock, Bug Catcher Colton, Lass Sally, and Bug Catcher James). Based on this data, I will probably rule out Quiet natures from consideration

Nature	Speed IV	Rival 1	Sammy	Brock		Colton			Sally		James	
		Bulbasaur	Weedle	Geodude	Onix	Caterpie	Weedle	Caterpie	Rattata	Nidoran-F	Caterpie	Metapod
Neutral	0-4	Speedtie	Weedle	Squirtle	Onix	Speedtie	Weedle	Squirtle	Rattata*	Squirtle	Squirtle	Squirtle
Neutral	5-13	Speedtie	Weedle	Squirtle	Onix	Squirtle	Weedle	Squirtle	Rattata*	Squirtle	Squirtle	Squirtle
Neutral	14-23	Squirtle	Weedle	Squirtle	Onix	Squirtle	Speedtie	Squirtle	Rattata*	Squirtle	Squirtle	Squirtle
Neutral	24-31	Squirtle	Weedle	Squirtle	Onix	Squirtle	Squirtle	Squirtle	Rattata*	Squirtle	Squirtle	Squirtle
Quiet	0-5	Bulbasaur	Weedle	Speedtie	Onix	Caterpie	Weedle	Caterpie	Rattata**	Speedtie	Speedtie	Squirtle
Quiet	6-13	Bulbasaur	Weedle	Speedtie	Onix	Caterpie	Weedle	Speedtie	Rattata*	Squirtle	Squirtle	Squirtle
Quiet	14-23	Speedtie	Weedle	Squirtle	Onix	Speedtie	Weedle	Squirtle	Rattata*	Squirtle	Squirtle	Squirtle

Quiet	24-31	Speedtie	Weedle	Squirtle	Onix	Squirtle	Weedle	Squirtle	Rattata*	Squirtle	Squirtle	Squirtle
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*Squirtle needs a Speedfall with Bubble turn one in order to outspeed turn two

**Squirtle needs a Speedfall with Bubble turn one in order to speedtie turn two

Special Attack Notes

- Crit Bubble kills Geodude for all +SpA natures (14/16 range for 0 SPA IV without Torrent, 100% with Torrent)
- Crit Bubble kills Onix for all +SpA natures (9/16 range for 0 SPA IV without Torrent, 100% with Torrent)
- Colton's Caterpie 1:
 - +SpA nature and 28-31 SPA IV 1-shots with Crit Torrent Bubble (4/16 range)
- Colton's Weedle:
 - +SpA nature and 28-31 SPA IV 1-shots with Crit Torrent Bubble (7/16 range)
- Colton's Caterpie 2:
 - +SpA nature and 28-31 SPA IV 1-shots with Crit Torrent Bubble (4/16 range)
- Sally's Rattata
 - +SpA nature 2-shots with Torrent with 1 crit
 - +SpA nature 2-shots without Torrent (low IVs may need 2 crits)
- Sally's Nidoran-F
 - +SpA nature 1-shots with Crit Torrent Water Gun
 - Without Torrent, Crit Water Gun is a range for 16-31 SpA IV
- James's Caterpie
 - Crit Water Gun 1-shots without Torrent
 - Crit Torrent Water Gun 1-shots for 16-31 SpA IV
 - Crit Torrent Water Gun is a range to 1-shot for 0-15 SpA IV
- James's Metapod
 - Crit Torrent Water Gun 1-shots
 - Crit Water Gun is a range for 0-7 SpA IV
 - Crit Water Gun 1-shots for 8-31 SpA IV
 - Torrent Water Gun 1-shots for **only** 31 SpA IV
 - As far as I can tell, this is the only fight where 31 vs. 30 makes a difference

Attack Notes

- All Squirtles are capable of 3-shotting the Bulbasaur
 - 0-3 Atk IV and Neutral nature needs 2 crits with ranges involved
 - Modest nature needs 2 crits with ranges involved
 - 4-31 Atk IV and Neutral nature needs 1 crit with at least one max roll non-crit
- Sammy's Weedle
 - Modest Squirtles cannot 3-shot
 - 0-3 Atk IV and Neutral nature cannot 3-shot
 - 4-31 Atk IV and Neutral nature can 3-shot with 3 crits and ranges:

- 1 max-roll
 - 2 10/16 rolls
- Based on this data, I will probably rule out Modest natures from consideration

Summary: Optimal Squirtle Specs

- Mild or Rash nature
- At least 4 Attack IV
- At least 28 SpA IV
 - 31 will save one crit text box, but may be hard to find
- At least 14 Speed IV
 - 14-23 will have to win one speedtie

Timing Note

Which Squirtles are available depends on whether or not the routing includes getting the Potion from the PC at the start of the game. The early game money routing requires getting either the PC Potion or the Route 1 Potion. The PC Potion is 42 frames slower than the Route 1 Potion, but depending on Squirtle availability, we may be able to make the time up

- The route currently being worked on gets the PC Potion and finds an optimal Squirtle with a very short delay, which makes it faster overall than the PC-less Squirtle which had a very long delay and suboptimal SpA IV
 - **15/30/13/31/23/30 Mild**
- If the crit and encounter RNG seems especially rough, I may revisit the PC-less Squirtle. But the RNG would need to be bad enough to make up for the extra crit text box
 - **22/7/4/30/30/15 Mild**

Late-Round 1 Super Repel Notes

- If we've already caught Rattata, Spearow and Mankey, it may be necessary to have a Repel up by the time that we go through Route 22 to avoid an unnecessary encounter
 - The best time to do this would be during the menu where we Escape Rope out of Sabrina's Gym. This repel would wear off midway through Route 22, between the two patches of grass
 - Depending on move and PP routing, there may also be a menu required in Giovanni's gym, which would also be an option for Repel usage
 - A second repel used right after the first one would wear off just before entering Victory Road
 - This would restrict Slowpoke availability to Berry Forest and Bond Bridge
 - This would restrict Fearow availability to Cycling Road
 - This would restrict Spearow availability to Route 3 and Cycling Road
 - This would restrict Mankey availability to Route 3 and Route 22
 - This would restrict Sandslash and Primeape availability to Victory Road

Cerulean (Misty & Nugget Bridge)

Route 4 Great Ball

- Need to recheck the ball routing. We may be able to skip picking this up
- Even if we need one extra ball, it is hypothetically faster to get the Net Ball in Game Corner due to the shorter name and shorter detour
 - Menuing in the balls section of the items bag may get more complicated if we get the Net Ball
- My rough estimation tells me we don't need extra balls:
 - Squirtle (1 of 60)
 - 5 initial Poke Balls (6 of 60)
 - Purchased Magikarp (7 of 60)
 - 21 Poke Balls purchased in Pewter (28 of 60)
 - 21 Great Balls purchased in Lavender (49 of 60)
 - We know we are buying more Great Balls than we need, but the menuing is faster that way
 - 15 Safari Pokes (64 of 60)
 - Evolve Wigglytuff (65 of 60)
 - Gift Lapras (66 of 60)
 - I'm now questioning my entire money routing, and trying to figure out if I can route out some item sales and reduce this ball total safely
- Rerouting:
 - Squirtle (1 of 60)
 - 5 initial Poke Balls (6 of 60)
 - Purchased Magikarp (7 of 60)
 - 15 Poke Balls purchased in Pewter (22 of 60)
 - 15 Safari Pokes (37 of 60)
 - Wigglytuff & Lapras (39 of 60)

Unlikely Reroute Option

- Depending on timings, we could move the non-attacking move into slot 1 early and teach Water Pulse immediately after Misty. This changes the order that we do the item menu, and potentially opens up new kill possibilities for Bridge Rival and Nugget Bridge

Misty/Bridge Rival Reroute Option

- Current routing:
 - MP, MK, non-attacking move and Pound in slots 1-4
 - Crit MP on Staryu (any roll)
 - Switch slots 2 and 4: MK in slot 2, Pound in slot 4
 - Crit MK Starmie (0-1 roll)

- Crit MP Pidgeotto (any roll)
- MP Rattata (any roll)
- Pound Abra (any roll)
- MK Bulbasaur (0-9 roll)
- Saryu and Bulbasaur both need the exact same ranges: 0-9 MK, or any crit MP
- Possible reroute:
 - MP, MK, Pound, non-attacking move in slots 1-4
 - MK Saryu
 - Crit MK Starmie
 - Crit MP Pidgeotto
 - MP Rattata
 - Pound Abra
 - Crit MP Bulbasaur
 - Rearrange moves somewhere later on:
 - The non-attacking move needs to be in slot 1 by the end of the Rocket Grunt so that Water Pulse can be taught
 - MK should be moved to slot 4 at some point to get it out of the way, since it is not needed again until Boat Rival

Bridge Rival/Bug Catcher Cale Reroute Option

- Abra dies to any Pound or Mega Punch. Cale's Metapod dies to any MP, or a max roll Pound. Current routing Pounds the Abra and Punches the Metapod. It is hypothetically faster to switch this, since we're Punching most of Rival's team and Pounding the rest of Cale's team
 - If we need to buy time to get the max roll on Metapod, we could do the move order shuffling that was put off in the Misty/Bridge Rival reroute option
 - If we get a really quick max roll Pound, we would still need to find some other time to shuffle moves