Assessing Risk of Fuse Pool 127 (0xB1's Kitchen Sink)

Useful Links

- Rari Gov
- Rari Docs
- Rari Security
- Fuse Pool 127
- Pool Details and Metrics
- Rari Safety Score Calculation

Context

DOLA is currently an illiquid asset on Fuse Pool 127. DOLA is also listed in the following pools (see table below):

Fuse Pool	Name	Asset Liquidity	Supplied	Borrowed
6	Tetranode's Pool	$9.4M	$10M	$600k
22	Badger Pool	$860.3k	$1M	$140k

DOLA Fed has a decision to make. Does it add liquidity to this pool?

As a reminder, admins control most all aspects of a Rari Fuse Pool. Some considerations,

- Admins keep all the Platform Fees generated
- If Admins deem the pool too risky, they could reduce the max LTV of DOLA (we have little to no say)
- Admins decide which assets to onboard, even if it a perceived threat/competition to us.
- If not well maintained, pools run the risk of becoming insolvent. Insolvency can occur in a multitude of ways some of which are tied to mismanagement of onboarding assets, capital being pulled/overall lacking, loss of interest, to name a few.

Rug & Exploit Risk

Multi-Sig or 48 hour Time lock?: Yes
Admin: 0xE150fEf6CDc4DB5168Ae3c85b74e442542d51de5
Upgradeable contracts: Yes
Price oracle: MasterPriceOracleV3
Liquidation Incentive: 8% (= Rari Recommendation)
Close Factor: 40% (below Rari Recommendation of 50%)

Rari Safety Score

Rari Safety Score 52.07% (Grade: C)

Pool 127 Details

of Assets: 16 (7 stablecoins)
Total USD Supplied: $17.2M
Total USD Borrowed: $6.01M
Utilization Rate: 34.09%
Fees: $9.18k
Top Utilized Assets: FODL (64%), ETH (54.7%), USDC (53%), FRAX (36%), USDT (34,2%), UST (29%)
Liquidations: 10

Below are Pool Stats for Fuse Pool 22, Badgers Pool, a recent DOLA integration for the DAO, and a comparable pool in terms of size.

# of Assets: 10 (5 stablecoins)
Total USD Supplied: $5.05M
Total USD Borrowed: $639k
Utilization Rate: 12.07%
Fees: $6.47k
Top Utilized Assets: USDC(24.1%), wBTC (16.9%), FEI (16.3%), DOLA (13.9%)
Liquidations: 18

Risks or other Concerns:

The risk team has identified concerns about several assets in the pool which may present outsized systemic risk to the pool and DOLA, specifically. For FODL, DOP, and VRN:

- Liquidity
- Ease of liquidation
- Oracle Risk
- Token price risk

Non-Conventional Collateral

This table lists the collateral that falls outside more conventional collateral like ETH or stablecoins:

Symbol	Market Cap	Collateral Factor	Reserve Factor	Total Supplied	Total Borrowed	Safety Score (Inverse KPI)
FODL	$37,459,472	75%	10%	$2,108,054	$1,350,083	0.67

VRN	$6,141,897	40%	10%	$955,180	$0	0.24
DOP	$8,707,812	30%	10%	$197,440	$0	0.38

FODL - Fodl is a fully decentralized leverage trading platform using liqiudity from collateral lending platforms like Compound and Aave instead of funding rate and margin markets.

VRN - Varen is an Ethereum based multi-chain DeFi hub, with a focus on bringing multi-chain services to retail DeFi users, powered by our DEX at varen.exchange.

DOP - Drops DAO provides loans for NFT and DeFi assets. The protocol uses lending pools that enable any type of NFT asset to be used as collateral – from collectibles and metaverse items, to financial NFTs. Users can leverage their idle NFTs and DeFi tokens to obtain loans and earn extra yield.

Assessment:

Rari Capital

Rari Capital can be deemed a safe protocol for Inverse to to work with/build on.

- RARI has been audited by three top tier Auditors: Quantstamp, Omniscia,and OpenZeppelin. These auditors have secured billions in funds and have a months-long backlog, meaning they are sought out in the industry. They each charge well over $100,000 for their services.
- RARI has an active Bug Bounty Program with Immunify, an industry leader for Bug Bounties. They have posted a $250,000 reward for critical severity issues, one of the highest rates you'll find in the market.

Fuse Pool 127

Rug & Exploit Risk:
Comparable to any other Fuse Pool. Not whitelisted by the Rari Team but not a cause for concern.

Pool Statistics:
Comparable to Badger Fuse Pool 22. Stats are healthy. Very few liquidations. Overall not a concern.

Oracles of Collateral Assets:
Most all assets listed use Chainlink, with some utilizing Uniswap Twap (including FODL and VRN).

DOP, one of the unconventional collateral assets, uses an unconventional oracle. In order to make permissionless loans work, an NFT price oracle is required to determine the NFT's value. Initially, the floor price of the collection will be used to set the underlying value for supplied NFTs. Premiums based on rarity traits will be added later on. The NFT floor price oracle is built using Chainlink infrastructure, enabling anyone to become a node operator. With each new sale, the floor value is subsequently updated. The last 10 sales that are outside probable outliers range are taken, ordered by sale size, and the lowest sale value is set as CurrentFloor. More here: https://docs.drops.co/nft-price-oracle/overview

TWAP oracle exploit

Time Weighted Average Price (TWAP) is a lagging indicator that becomes out of sync with the market-wide price during times of moderate to high volatility, leading to inaccurate data being consumed by smart contracts that put protocols at risk of under-collateralization.

The naive way to use an AMM liquidity pool as a price oracle is by simply dividing the number of tokens currently residing within each side of the pool to get an exchange rate. While this does provide the current spot price of the liquidity pool, it's extremely vulnerable to manipulation. Smart contracts using AMM spot prices as oracles can be easily exploited through sandwich attacks — an attack vector where a malicious entity makes a large trade within an AMM liquidity pool to shift the price in their favor, then uses that distorted pricing to unfairly siphon value from smart contracts using that AMM liquidity pool as a spot price oracle. It is therefore highly recommended, even by Uniswap, to avoid using AMM spot prices as oracles because they can (and will) be manipulated, resulting in user losses.

In the context of Fuse Pool 127, $VRN and $FODL (& $xFODL) are both using Uniswap TWAP, and together make up a large chunk of the supply of the pool ($7M at current prices, 36% of total supply). Both of these assets also have low liquidity. VRN only has 1 Market pool with $990k liquidity, very low. FODL has 3 on Ethereum Mainnet with $14.3M liquidity, close to the total supply of the Fuse Pool. $VRN puts the entire pool at risk of a TWAP exploit. 63% of the $VRN in the pool comes from a single wallet so It's possible (unverified) that the majority of the current $VRN and $FODL being supplied to the pool comes directly from the 0xB1's reserves. If that were the case, the Admin of the pool has an additional incentive for such a scenario not to occur. There are measures they can take on their end (and we can advise they take, such as lowering CF, putting a hard limit on supply) to secure the pool.

An attacker could slowly buy and add to the lending market and then carry out the exploit at any point. 0XB1 has listened to our concerns on the topic and has set a hard cap on supply to 6000 $VRN, thus addressing the issue, and significantly reducing the risk of such an exploit. We should always recommend supply caps on lower liquidity TWAPS if not currently present. For assets with very low liquidity (less than $1M), we recommend supply be capped at the depth of the underlying asset in the DEX with the most liquidity.

Liquidity Stats:

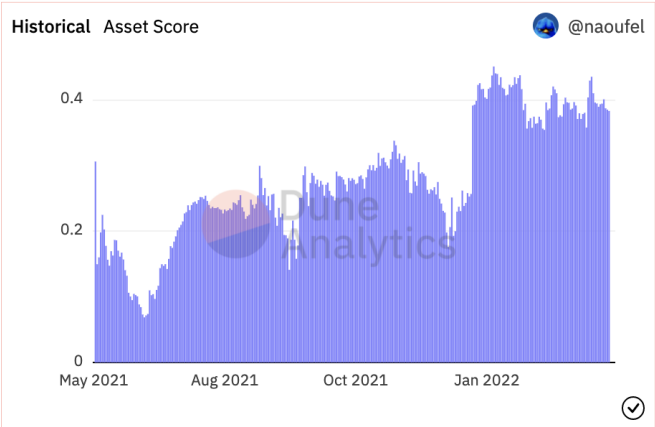
Unconventional Assets	# Markets on Ethereum	# CEX	Deepest DEX Liquidity ($)	Total Liquidity on Ethereum	Liquidity/Market Cap Ratio
FODL	3	8	$7.3M	$14.3M	0.37
VRN	1	1	$990k	$990k	0.12
DOP	1	3	$1.2M	$1.2M	0.13

Collateral Stats:

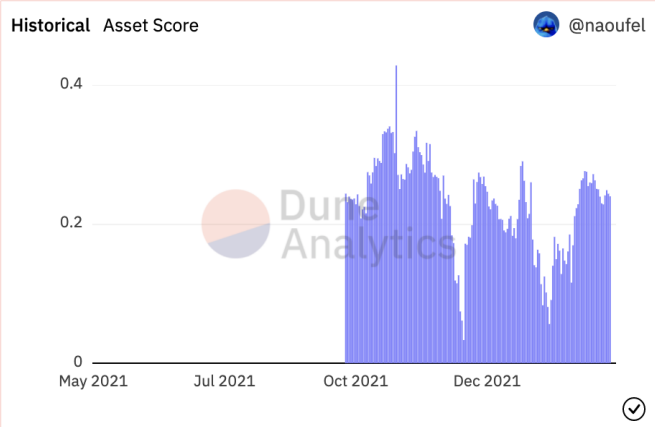
- FODL stats are okay. Impression is 0xb1 team is actively managing these levers. 75% CF is very high for such a volatile asset.
- DOP - it is unlikely anyone will borrow DOP from this pool. Available funds are at this stage low enough where it would not jeopardize the asset in case of liquidations. 30% CF is appropriate.
- VRN supplied to the pool is very high, 15.5% of total supply. This tied with a 40% CF is a cause for concern. CF for VRN should be 30%. Overall VRN is a cause for concern. (UPDATE: 03/22 - VRN CF has been lowered to 30%)

Safety Scores:

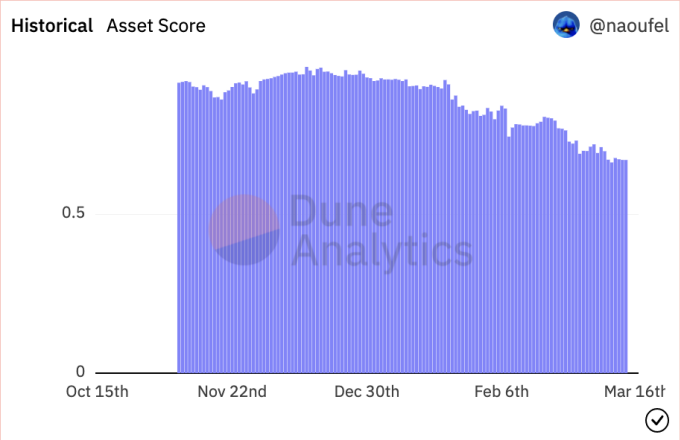
SS are are unsurprisingly low for VRN and DOP. VRN SS and historic performance makes 75% CF more justifiable. Historic SS for DOP looks better. VRN is a cause for concern. It is a very volatile asset. See charts below:



$DOP Safety Score



$VRN Safety Score



$FODL Safety Score

Added Notes:

- 0xb1 is incentivizing users to deposit and borrow from this pool with rewards paid out in $FODL. This can be viewed as a strong commitment from the founders of $FODL and likely that they have future plans for the pool.
- KIRO, an asset that would've made our non-conventional collateral list, was recently deprecated from the Fuse Pool. Further evidence that this pool is not "on the backburner".

In conclusion, we've addressed ease of liquidation, oracle risk, TWAP exploits, token price risk, and liquidity issues for the unconventional collateral assets in Fuse Pool 127. FODL and DOP are not a cause for concern. VRN is a liability and 0XB1 need to address how they are mitigating the possibility of a flash loan attack or a whale exploiting the TWAP oracle. If their answer this satisfactory, I would support a move from the Growth Team to supply DOLA to the pool, but suggest caution. VRN pool stats would have to be monitored periodically before DOLA Fed injects more capital. An initial injection between $500k and $1M is appropriate.

UPDATE (MARCH 18th)

Today, 0xb1 has added two collateral assets to Fuse Pool 127: $APE, and $JPEG. These should be considered non-conventional assets and so a brief analysis follows. As of this write-up…

Symbol	Market Cap	Collateral Factor	Reserve Factor	Total Supplied	Total Borrowed	Safety Score (Inverse KPI)
APE	$1,735,970,475	69%	6%	$985,990.00	$447,437.00	N/A
JPEG	? FDV ($163,233,520)	69%	5%	$185,019.00	$0	0.46

Pool Statistics:

From previous writeup (March 17th), changes are summarized below:

# of Assets: 18 (7 stablecoins)
Total USD Supplied: $18.3M (*+$1.1M*)
Total USD Borrowed: $6.33M (*+$320k*)
Utilization Rate: 34.5% (*+0.41%*)
Fees: $9.43k (*+$250*)
Liquidations: 10 (*0*)

Oracles of Collateral Assets:

$JPEG and $APE use UniTWAP, like FODL and VRN. This isn't an immediate cause for concern. $APE liquidity is deep (over $50M on Ethereum DEX's). $JPEG as well (2 DEXs, close to $10M). A TWAP Oracle exploit stemming from these two assets is unlikely.

Liquidity Stats:

Unconventional Assets	# Markets on Ethereum	# CEX	Deepest Liquidity ($)	Total Liquidity on Ethereum	Liquidity/Market Cap Ratio
APE	8	50+	$25M	$55M	0.03
JPEG	2	1	$9.5M	$9.5M	0.05

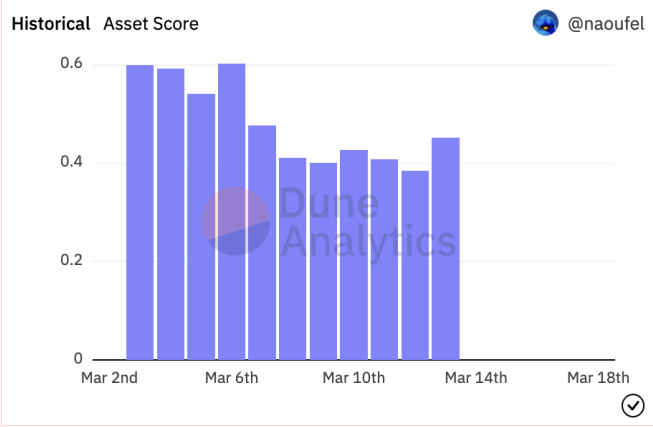
Collateral Stats:

$JPEG and $APE have entered with very high CF (69%) and low reserves (5% & 6% respectively). This is a cause for concern as they are both novel assets and one can expect price volatility in the interim. For the time being, their supply amounts are low compared to the total pool (6.3% combined of the total $18.3M), which is reassuring. However, if supplies are

expanded, one can expect numerous liquidations to eventually occur from this pool. CF's should optimistically be 30-40%, like for $DOP and $VRN.

Safety Scores:

Interpretation for SS of novel assets should be limited. Below is $JPEG's. $APE will be scored when there is more data. (SS for novel assets require two-week minimum of price history in order for any useful information to be extrapolated).



$JPEG Safety Score

DOLA expansion should proceed but we should exercise extreme caution. Risk Team advises DOLA Fed to inject a maximum of $1M in this Fuse Pool. This should remain unchanged until CF concerns for $VRN, $APE, and $JPEG are addressed.