

# Inverse <> Additional Rari Fuse Pool Candidates

## Useful Links

- [Rari Gov](#)
- [Rari Docs](#)
- [Rari Security](#)
- [Rari Safety Score Calculation](#)

## Context

DOLA is listed in the following Rari Fuse 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 currently injected 11M \$DOLA in Rari Fuse Pools and is intent on adding to this figure. At the present time, three additional pools are being considered (two of which already have DOLA listed but without any supplied. That is Fuse Pool 18 (Olympus Pool Party), 24 (FARMstead Harvest), and 127 (0xB1's Kitchen Sink). While the Inverse Growth Team pursues these opportunities, the Risk Team is set out to explore more possible integrations within the Rari ecosystem.

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.

Considering all the above, the Risk Team has identified three additional Fuse Pools that fit the DOLA liquidity narrative. That is, Fuse Pool 9 (Index Coop Pool), 27 (The Animal Kingdom), and 31 (NFTX Pool). Findings and recommendations are presented below:

## Rug & Exploit Risk

	Multi-Sig or 48 hour Time lock	Upgradeable Contracts	Price Oracle	Liquidation Incentive	Close Factor
Index Coop Pool	Yes	Yes	MasterPriceOracleV1	17%	50%
The Animal Kingdom	Yes	Yes	MasterPriceOracleV3	10%	40%
NFTX Pool	Yes	Yes	MasterPriceOracleV1	10%	50%

Note:

- CF for Animal Kingdom is 40% (lower than what Rari recommends but leads to less aggressive selling pressure).
- Liquidation incentive is higher for all three pools than Rari recommended 8%, but particularly high for Index Coop Pool (very high).

## Rari Safety Score

	RSS (%)	Grade
Index Coop Pool	49.32	D
The Animal Kingdom	44.70	D
NFTX Pool	59.91	C

Note:

- Grades are within normal range compared to other Fuse Pools. NFTX Pool has received a surprisingly high grade.

## Pool Details

	# Assets / Stables	Total USD Supplied	Total USD Borrowed	Utilization Rate	Liquidations
Index Coop Pool	9 / 4	\$1.18M	\$1.2k	0.1%	2

<b>The Animal Kingdom</b>	10 / 4	\$17.8M	\$3.11M	17.5%	123
<b>NFTX Pool</b>	6 / 3	\$7.69M	\$1.1M	14.3%	3

Note:

- The utilization rate for the Index Coop Pool is essentially 0. Cause for concern. Pool would appear to be “dead”. Index Coop needs to explain why this is.
- Liquidations for The Animal Kingdom are very high, possibly due to the volatile nature of the assets in the pool. Cause for concern. Otherwise Supply, and Borrow figures look healthy.
- NFTX Pool appears to be healthy.

#### Top Supplied Assets

	<b>Rank #1</b>	<b>Rank #2</b>	<b>Rank #3</b>	<b>Rank #4</b>	<b>Rank #5</b>
<b>Index Coop Pool</b>	FEI (\$599K)	DPI (\$578k)	N/A	N/A	N/A
<b>The Animal Kingdom</b>	BPT (\$7M)	SDT (\$5M)	FRAX (\$4M)	FEI (\$1M)	xSDT (\$828k)
<b>NFTX Pool</b>	NFTX (\$3M)	FRAX (\$2M)	PUNK (\$1M)	ETH (\$1M)	N/A

Note:

- Index Coop only has two assets supplied to the pool
- Large amounts of BPT and SDT (and xSDT) have been deposited to the Animal Kingdom Pool, these make up of 72% of total supplied assets. These non-conventional assets would need to be explored further (more on this in later section).
- Large amounts of NFTX and PUNK have been deposited to the NFTX Pool, which is expected. These non-conventional assets would need to be explored further (more on this in later section).

#### Top Utilized Assets

	<b>Rank #1</b>	<b>Rank #2</b>	<b>Rank #3</b>	<b>Rank #4</b>	<b>Rank #5</b>
<b>Index Coop Pool</b>	FEI (0.1%)	N/A	N/A	N/A	N/A
<b>The Animal Kingdom</b>	ETH (83%)	FEI (64.9%)	FRAX (54.5%)	agEUR (25.3%)	sdeursCRV (14.9%)
<b>NFTX Pool</b>	PUNK (79.8%)	FEI (17.6%)	FRAX (15.7%)	N/A	N/A

Note:

- Index Coop Pool is essentially \$0 borrowed.
- Flow from The Animal Kingdom appears to be that StakeDAO native assets are deposited and in return ETH and stables are borrowed. Could see a market fit for DOLA.
- Flow from NFTX Pool is difficult to deduce. At first glance it appears that mainly NFTX, and Stable is deposited and PUNK is borrowed. More difficult pitch for DOLA.

## Risks or other Concerns:

The risk team has identified concerns about several assets in the pools which may present outsized systemic risk to the pool and DOLA, specifically. These include risks tied to:

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

## Non-Conventional Collateral

This table lists the collaterals from all three Fuse Pools that falls outside more conventional collateral like ETH or stablecoins:

Symbol	Market Cap	Collateral Factor	Total Supplied	Utilization Rate	Price Oracle	Safety Score (Inverse KPI)
BPT	\$17,219,926	60%	\$6,843,746	0%	UNI TWAP	0.56
SDT	\$29,341,778	50%	\$5,020,162	0%	UNI TWAP	0.44
xSDT	\$9,553,797	60%	\$828,710	0%	StakedSDT	N/A
NFTX	\$38,827,575	50%	\$3,451,633	0%	UNI TWAP	0.48
PUNK	\$23,637,986	50%	\$1,132,465	68%	UNI TWAP	0.37

BPT - BlackPool is a project that manages digital assets in the metaverse and play-to-earn space. BPT token holders can vote in governance and also earn fees generated by the digital assets such as yield from games such as Axie Infinity, Sorare, and more that are managed by the BlackPool DAO.

SDT - The Stake DAO Token is a governance token which allows users to vote and earn fees generated on Stake DAO via products such as staking and automated investment strategies. Stake DAO is a new multi-service DeFi platform built by the community which leverages the entire DeFi ecosystem to give users access to the most effective investment strategies.

xSDT - represents SDT that is staked in the Stake DAO ecosystem.

NFTX - is a NFT index funds protocol built on top of Ethereum. There are two types of funds on NFTX - D1 and D2 funds. Every D1 fund token has a 1:1 backing against an NFT. For example, if a user owns 2 PUNK-ZOMBIE, that means the user can redeem exactly two random zombie CryptoPunks at any moment. Every D2 fund token is a Balancer pool's Liquidity Provider (LP) token that has exposure to several D1 funds' token.

PUNK - Punk Vault is an ERC-20 vault token representing NFT assets within a NFTX Vault. Specifically, it is a D2 fund that combines five different D1 Punk funds (PUNK-ZOMBIE, PUNK-FEMALE, PUNK-BASIC, PUNK-ATTR-4, and PUNK-ATTR-5).

## 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.

### Non-Conventional Assets

#### Oracles:

The non-conventional assets use UNI TWAP. 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 The Animal Kingdom, \$BPT and \$SDT (& \$xSDT) are both using Uniswap TWAP, and together make up the majority of the supply of the pool (\$14M at current prices, 76% of total supply). As for liquidity, \$BPT only has 1 Market pool with \$880k liquidity, whereas \$SDT has 2 on Ethereum Mainnet with \$1.5M liquidity. \$SDT and \$BPT this puts the entire Pool at risk

of a TWAP exploit. It's likely, however, that the majority of the current \$SDT and \$BPT being supplied to the pool comes directly from the Stake DAO's reserves, so 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) to secure the pool.

As for the NFTX Pool, \$NFTX and \$PUNK are also both using Uniswap TWAP, and together make up the majority of the supply of the pool (\$5M at current prices, 64% of total supply). \$NFTX and \$PUNK only have 2 market pools but with \$8.1M and \$17M in liquidity respectively, they both have deeper liquidity than the Fuse Pool. Therefore, a TWAP oracle exploit for this pool is unlikely.

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:**

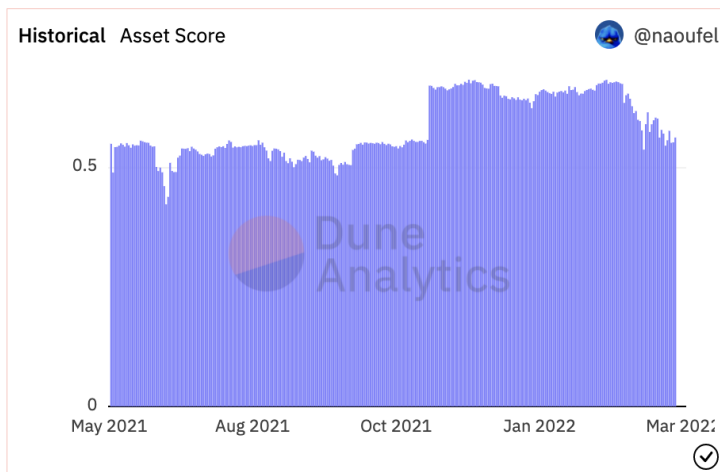
Unconventional Assets	# Markets on Ethereum	# CEX	Deepest Liquidity (\$)	Total Liquidity on Ethereum	Liquidity/Market Cap Ratio
BPT	1	0	\$890k	\$890k	0.05
SDT	2	2	\$1.2M	\$1.4M	0.04
NFTX	2	5	\$8.2M	\$8.2M	0.2
PUNK	1	1	\$17M	\$17M	0.72

#### **Collateral Stats:**

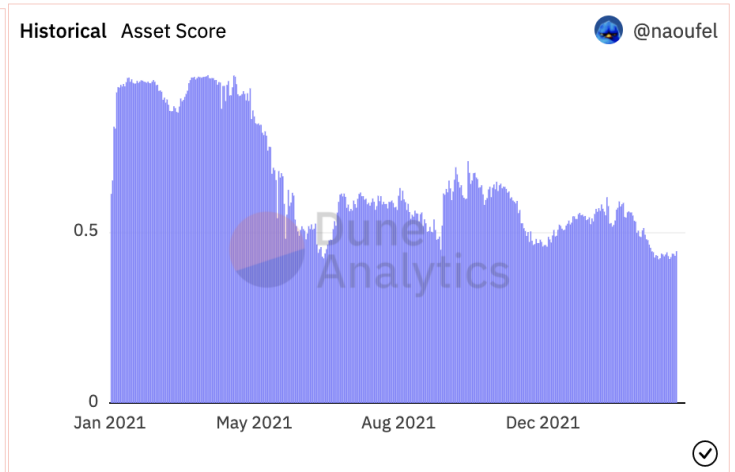
- BPT: CF is high (40% would be more appropriate). Utilization rate is 0% (less risk). Safety Score is good.
- SDT: CF is high (40% would be more appropriate). Utilization rate is 0% (less risk). Safety Score is low, likely due to price volatility.
- xSDT: CF is high (40% would be more appropriate). CF is higher for xSDT than for SDT (unusual). Utilization rate is 0% (less risk).
- NFTX - CF is high (40% would be more appropriate). Utilization rate is 0% (less risk). Safety score is low, likely due to low asset liquidity and low swap and transfer amounts.
- PUNK - CF is high (40% would be more appropriate). Utilization rate is very high 68% (Risky, liquidation event could occur if Punk Floor were to fall substantially). Safety score is very low, likely due to low asset liquidity and low swap and transfer amounts.

## Safety Scores:

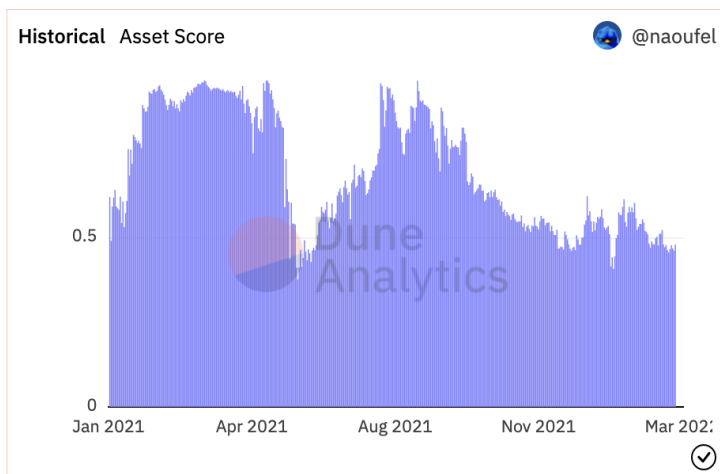
Below are the Safety Scores, plotted against time, for the Non-conventional collaterals studied above:



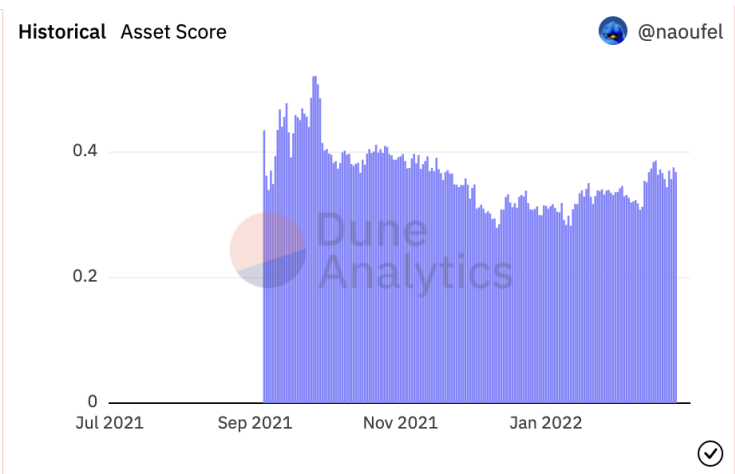
**\$BPT Safety Score**



**\$SDT Safety Score**



**\$NFTX Safety Score**



**\$PUNK Safety Score**

In conclusion, we've addressed ease of liquidation, oracle risk, token price risk, and liquidity issues for the unconventional collateral assets in Fuse Pool 9 (Index Coop Pool), 27 (The Animal Kingdom), and 31 (NFTX Pool). The Risk Team recommends that if Inverse Growth Team were to pursue any of these pools, that they should be priorities according to the order presented below. Other Rari Fuse Pool to consider and add to this list, if conditions are favorable, are Fuse Pool 36 (Fraximalist Money Market) and Fuse Pool 8 (FeiRARI).

Rank #1 - #3: The Animal Kingdom, NFTX Pool, Index Coop Pool