



METATRUST

Draft  
Security Assessment for  
**89-2022-02-hubble  
(1New-FD) (1Positive-  
FLP) (1OK-SP)**

July 23, 2023

## Executive Summary

Overview			
Project Name	89-2022-02-hubble (1New-FD) (1Positive-FLP) (1OK-SP)		
Codebase URL	https://github.com/code-423n4/2022-02-hubble		
Scan Engine	AI Analyzer		
Scan Time	2023/07/23 02:00:02		
Commit Id	ed1d885		






  

Total			
Critical Issues	0		
High risk Issues	3		
Medium risk Issues	0		
Low risk Issues	0		
Informational Issues	0		

Critical Issues		The issue can cause large economic losses, large-scale data disorder, loss of control of authority management, failure of key functions, or indirectly affect the correct operation of other smart contracts interacting with it.
High Risk Issues		The issue puts a large number of users' sensitive information at risk or is reasonably likely to lead to catastrophic impacts on clients' reputations or serious financial implications for clients and users.
Medium Risk Issues		The issue puts a subset of users' sensitive information at risk, would be detrimental to the client's reputation if exploited, or is reasonably likely to lead to moderate financial impact.
Low Risk Issues		The risk is relatively small and could not be exploited on a recurring basis, or is a risk that the client has indicated is low-impact in view of the client's business circumstances.
Informational Issue		The issue does not pose an immediate risk but is relevant to security best practices or Defence in Depth.



	Critical Issues	0%	<b>0</b>
	High risk Issues	100%	<b>3</b>
	Medium risk Issues	0%	<b>0</b>
	Low risk Issues	0%	<b>0</b>
	Informational Issues	0%	<b>0</b>

## Summary of Findings

MetaScan security assessment was performed on **July 23, 2023 02:00:02** on project **89-2022-02-hubble (1New-FD) (1Positive-FLP) (1OK-SP)** with the repository **<https://github.com/code-423n4/2022-02-hubble>** on branch **default branch**. The assessment was carried out by scanning the project's codebase using the scan engine **AI Analyzer**. There are in total **3** vulnerabilities / security risks discovered during the scanning session, among which **0** critical vulnerabilities, **3** high risk vulnerabilities, **0** medium risk vulnerabilities, **0** low risk vulnerabilities, **0** informational issues.

ID	Description	Severity
MSA-001	MWE-200: Insecure LP Token Value Calculation	High risk
MSA-002	MWE-204: Unsafe First Deposit	High risk
MSA-003	MWE-206: No Slippage Limit Check	High risk

## Findings


### Critical (0)

No Critical vulnerabilities found here

### High risk (3)

#### 1. MWE-200: Insecure LP Token Value Calculation

 High risk

 Security Analyzer

Liquidity token value/price can be manipulated to cause flashloan attacks.

##### File(s) Affected



contracts/HubbleViewer.sol #315-324

```
315     function calcWithdrawAmounts(uint dToken, uint idx) external view returns (uint quoteAsset, uint baseAsset) {
316         IAMM amm = clearingHouse.amms(idx);
317         IVAMM vamm = amm.vamm();
318
319         uint totalDTokenSupply = vamm.totalSupply();
320         if (totalDTokenSupply > 0) {
321             quoteAsset = vamm.balances(0) * dToken / totalDTokenSupply;
322             baseAsset = vamm.balances(1) * dToken / totalDTokenSupply;
323         }
324     }
```

##### Recommendation

Do not use AMM pool or custom liquidity calculation to calculate LP token value/price.

## 2. MWE-204: Unsafe First Deposit

 High risk Security Analyzer

First depositor can break minting of shares or drain the liquidity of all users.

### File(s) Affected



contracts/InsuranceFund.sol #39-60

```
39     function deposit(uint _amount) external {
40         settlePendingObligation();
41         // we want to protect new LPs, when the insurance fund is in deficit
42         require(pendingObligation == 0, "IF.deposit.pending_obligations");
43
44         uint _pool = balance();
45         uint _totalSupply = totalSupply();
46         if (_totalSupply == 0 && _pool > 0) { // trading fee accumulated while there were no IF LPs
47             vusd.safeTransfer(governance, _pool);
48             _pool = 0;
49         }
50
51         vusd.safeTransferFrom(msg.sender, address(this), _amount);
52         uint shares = 0;
53         if (_pool == 0) {
54             shares = _amount;
55         } else {
56             shares = _amount * _totalSupply / _pool;
57         }
58         _mint(msg.sender, shares);
59         emit FundsAdded(msg.sender, _amount, block.timestamp);
60     }
```

### Recommendation

When totalSupply() == 0, send the first min liquidity LP tokens to the zero address to enable share dilution.

### 3. MWE-206: No Slippage Limit Check

 High risk Security Analyzer

No slippage limit check was performed to prevent sandwich attacks.

#### File(s) Affected

contracts/ClearingHouse.sol #163-186

```
163     function _liquidateMaker(address maker) internal {
164         require(
165             _calcMarginFraction(maker, false) < maintenanceMargin,
166             "CH: Above Maintenance Margin"
167         );
168         int256 realizedPnl;
169         uint quoteAsset;
170         for (uint i = 0; i < amms.length; i++) {
171             (, uint dToken,,, ) = amms[i].makers(maker);
172             // @todo put checks on slippage
173             (int256 _realizedPnl, uint _quote) = amms[i].removeLiquidity(maker, dToken, 0, 0);
174             realizedPnl += _realizedPnl;
175             quoteAsset += _quote;
176         }
177
178         _disperseLiquidationFee(
179             _chargeFeeAndRealizePnL(
180                 maker,
181                 realizedPnl,
182                 2 * quoteAsset, // total liquidity value = 2 * quote value
183                 true // isLiquidation
184             )
185         );
186     }
```

contracts/ClearingHouse.sol #139-146

```
139     function liquidate(address trader) override external whenNotPaused {
140         updatePositions(trader);
141         if (isMaker(trader)) {
142             _liquidateMaker(trader);
143         } else {
144             _liquidateTaker(trader);
145         }
146     }
```

#### Recommendation

Add slippage limit check when do liquidity-related operations.

### Medium risk (0)

No Medium risk vulnerabilities found here

### Low risk (0)

No Low risk vulnerabilities found here

## Informational (0)

No Informational vulnerabilities found here

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