

Draft
Security Assessment for

# 115-2022-04-mimo (StaticFail) (1Positive-FLP)

July 23, 2023



High risk Issues

Low risk Issues

Informational

Medium risk Issues

# **Executive Summary**

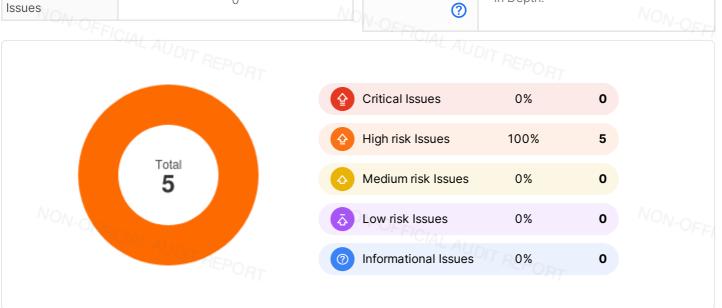
Overview Open	No.
Project Name	115-2022-04-mimo (StaticFail) (1Positive-FLP)
Codebase URL	https://github.com/code-423n4/2022- 04-mimo
Scan Engine	Al Analyzer
Scan Time	2023/07/23 17:06:50
Commit Id	b18670f

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Commit Id	b18670f
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Total	
Critical Issues	0

0

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 <b>△</b>	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.





# **Summary of Findings**

MetaScan security assessment was performed on July 23, 2023 17:06:50 on project 115-2022-04-mimo (StaticFail) (1Positive-FLP) with the repository https://github.com/code-423n4/2022-04-mimo on branch default branch. The assessment was carried out by scanning the project's codebase using the scan engine Al Analyzer. There are in total 5 vulnerabilities / security risks discovered during the scanning session, among which 0 critical vulnerabilities, 5 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-200: Insecure LP Token Value Calculation	High risk
MSA-003	MWE-200: Insecure LP Token Value Calculation  MWE-200: Insecure LP Token Value Calculation	High risk
MSA-004	MWE-200: Insecure LP Token Value Calculation	High risk
MSA-005	MWE-200: Insecure LP Token Value Calculation	High risk





# **Findings**



# Critical (0)

No Critical vulnerabilities found here TCIAL AUDIT REPORT



# High risk (5)

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

core/contracts/oracles/GUniLPOracle.sol #91-125

```
function latestRoundData()
 public
 view
 override
returns (
  uint80 roundId,
  int256 answer,
   uint256 startedAt,
  uint256 updatedAt,
   uint80 answeredInRound
  (, int256 answerA, , uint256 assetUpdatedAtA, ) = oracleA.latestRoundData();
  (, int256 answerB, , uint256 assetUpdatedAtB, ) = oracleB.latestRoundData();
 uint256 priceA = uint256(answerA);
 uint256 priceB = uint256(answerB);
 uint160 sqrtPriceX96 = uint160(
   MathPow.sqrt((priceA.mul(_tokenDecimalsUnitB).mul(1 << 96)) / (priceB.mul(_tokenDecimalsUnitA)))
 (uint256 rA, uint256 rB) = pool.getUnderlyingBalancesAtPrice(sqrtPriceX96);
 require(totalSupply >= 1e9, "C101");
   priceA.mul(rA.mul(_tokenDecimalsOffsetA)).add(priceB.mul(rB.mul(_tokenDecimalsOffsetB))).div(tota
 updatedAt = assetUpdatedAtA;
  // use ealier time for updateAt
 if (assetUpdatedAtA > assetUpdatedAtB) {
   updatedAt = assetUpdatedAtB;
                                       NON-OFFICIAL AUDIT REPORT
```

## Recommendation

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



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





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

#### File(s) Affected

core/contracts/oracles/BalancerV2LPOracle.sol #88-124

```
function latestRoundData()
   public
   view
   override
   returns (
   uint80 roundId,
   int256 answer,
   uint256 startedAt,
    uint256 updatedAt,
    uint80 answeredInRound
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   (address[] memory tokens, uint256[] memory balances, ) = vault.getPoolTokens(poolId);
   (, int256 answerA, , uint256 assetUpdatedAtA, ) = oracleA.latestRoundData();
   (, int256 answerB, , uint256 assetUpdatedAtB, ) = oracleB.latestRoundData();
   uint256[] memory normalizedWeights = pool.getNormalizedWeights();
   uint256 pxA = uint256(answerA);
   uint256 pxB = uint256(answerB);
(uint256 fairRess,
    _getNormalizedBalance(tokens[0], balances[0]),
    _getNormalizedBalance(tokens[1], balances[1]),
    _lizedWeights[0],
    рхВ
   answer = int256(fairResA.mul(pxA).add(fairResB.mul(pxB)).div(pool.totalSupply()));
   updatedAt = assetUpdatedAtA;
  updatedAt = assetUpdatedAtB;
```

## Recommendation

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







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





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

#### File(s) Affected

core/contracts/liquidityMining/GenericMiner.sol #164-173

```
function _refresh() internal {
    if (totalStake == 0) {
        return;
    }

    uint256 currentBalance = a.mimo().balanceOf(address(this));
    uint256 reward = currentBalance.sub(_balanceTracker);
    _balanceTracker = currentBalance;

    _accAmountPerShare = _accAmountPerShare.add(reward.rayDiv(totalStake));
}
```

core/contracts/liquidityMining/GenericMiner.sol #112-133

## Recommendation

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

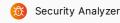
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## 4. MWE-200: Insecure LP Token Value Calculation





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

#### File(s) Affected

core/contracts/liquidityMining/v2/PARMinerV2.sol #375-383

```
function _pendingMIMO(uint256 _userStakeWithBoost, uint256 _userAccAmountPerShare) internal view retu
 if (_totalStakeWithBoost == 0) {
 uint256 currentBalance = _a.mimo().balanceOf(address(this));
 uint256 reward = currentBalance.sub( mimoBalanceTracker);
 uint256 accMimoAmountPerShare = _accMimoAmountPerShare.add(reward.rayDiv(_totalStakeWithBoost));
 return _userStakeWithBoost.rayMul(accMimoAmountPerShare.sub(_userAccAmountPerShare));
```

#### Recommendation

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

## MWE-200: Insecure LP Token Value Calculation





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

#### File(s) Affected

core/contracts/liquidityMining/v2/GenericMinerV2.sol #280-288

```
function _pendingMIMO(uint256 _userStakeWithBoost, uint256 _userAccAmountPerShare) internal view retu
        if (_totalStakeWithBoost == 0) {
282 - return 0;
        uint256 currentBalance = _a.mimo().balanceOf(address(this));
        uint256 reward = currentBalance.sub(_mimoBalanceTracker);
        uint256 accMimoAmountPerShare = _accMimoAmountPerShare.add(reward.rayDiv(_totalStakeWithBoost));
        return _userStakeWithBoost.rayMul(accMimoAmountPerShare.sub(_userAccAmountPerShare));
```

### Recommendation

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



# Medium risk (0)

AUDIT REPORT 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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