



SMART CONTRACT AUDIT



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PREPARED FOR

VENOM STAKING AND REWARDER



INTRODUCTION

Auditing Firm	InterFi Network
Client Firm	Venom
Methodology	Automated Analysis, Manual Code Review
Language	Solidity
Staking Contract	0x5784B19b012F128c740df15b6bFb6cDd6b52Bef2
Rewarder Contract	0xAd45fE74bBeB7d7Eb36F98f44085D8a53Ef1aEac
Blockchain	Ethereum Chain
Centralization	Active ownership via Gnosis Safe
Commit	34ac8f265cec4e637c181957040db14da7aaa219
Website	http://venomcrypto.io/
Telegram	https://t.me/VenomERC/
Twitter	https://twitter.com/ercvenom/
Report Date	January 22, 2023

 Verify the authenticity of this report on our website: <https://www.interfi.network/audits>



EXECUTIVE SUMMARY

InterFi has performed the automated and manual analysis of solidity codes. Solidity codes were reviewed for common contract vulnerabilities and centralized exploits. Here's a quick audit summary:

Status	Critical ●	Major ●	Medium ●	Minor ●	Informational ●
Open	0	0	0	1	2
Acknowledged	0	0	1	1	0
Resolved	0	1	1	0	1
Noteworthy Privileges	Refer to PAGE 20 for centralization related privileges				

i Please note that smart contracts deployed on blockchains aren't resistant to exploits, vulnerabilities and/or hacks. Blockchain and cryptography assets utilize new and emerging technologies. These technologies present a high level of ongoing risks. For a detailed understanding of risk severity, source code vulnerability, and audit limitations, kindly review the audit report thoroughly.

i Please note that centralization privileges regardless of their inherited risk status - constitute an elevated impact on smart contract safety and security.



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SCOPE OF WORK

InterFi was consulted by Venom to conduct the smart contract audit of their solidity source codes. The audit scope of work is strictly limited to mentioned solidity file(s) only:

- VenomStaking.sol
- VenomRewarder.sol

i If source codes are not deployed on the main net, they can be modified or altered before main-net deployment. Verify the contract's deployment status below:

Public Contract Link	
https://etherscan.io/address/0x5784B19b012F128c740df15b6bFb6cDd6b52Bef2#code	
Contract Name	VenomStaking
Compiler Version	0.8.17
License	MIT

Public Contract Link	
https://etherscan.io/address/0xAd45fE74bBeB7d7Eb36F98f44085D8a53Ef1aEac#code	
Contract Name	VenomRewarder
Compiler Version	0.8.17
License	MIT



AUDIT METHODOLOGY

Smart contract audits are conducted using a set of standards and procedures. Mutual collaboration is essential to performing an effective smart contract audit. Here's a brief overview of InterFi's auditing process and methodology:

CONNECT

- The onboarding team gathers source codes, and specifications to make sure we understand the size, and scope of the smart contract audit.

AUDIT

- Automated analysis is performed to identify common contract vulnerabilities. We may use the following third-party frameworks and dependencies to perform the automated analysis:
 - Remix IDE Developer Tool
 - Open Zeppelin Code Analyzer
 - SWC Vulnerabilities Registry
 - DEX Dependencies, e.g., Pancakeswap, Uniswap
- Simulations are performed to identify centralized exploits causing contract and/or trade locks.
- A manual line-by-line analysis is performed to identify contract issues and centralized privileges.

We may inspect below mentioned common contract vulnerabilities, and centralized exploits:

Centralized Exploits	<ul style="list-style-type: none">○ Token Supply Manipulation○ Access Control and Authorization○ Assets Manipulation○ Ownership Control○ Liquidity Access○ Stop and Pause Trading○ Ownable Library Verification
----------------------	---



Common Contract Vulnerabilities	<ul style="list-style-type: none"> ○ Integer Overflow ○ Lack of Arbitrary limits ○ Incorrect Inheritance Order ○ Typographical Errors ○ Requirement Violation ○ Gas Optimization ○ Coding Style Violations ○ Re-entrancy ○ Third-Party Dependencies ○ Potential Sandwich Attacks ○ Irrelevant Codes ○ Divide before multiply ○ Conformance to Solidity Naming Guides ○ Compiler Specific Warnings ○ Language Specific Warnings
---------------------------------	---

REPORT

- The auditing team provides a preliminary report specifying all the checks which have been performed and the findings thereof.
- The client's development team reviews the report and makes amendments to solidity codes.
- The auditing team provides the final comprehensive report with open and unresolved issues.

PUBLISH






- The client may use the audit report internally or disclose it publicly.

 It is important to note that there is no pass or fail in the audit, it is recommended to view the audit as an unbiased assessment of the safety of solidity codes.



RISK CATEGORIES

Smart contracts are generally designed to hold, approve, and transfer tokens. This makes them very tempting attack targets. A successful external attack may allow the external attacker to directly exploit. A successful centralization-related exploit may allow the privileged role to directly exploit. All risks which are identified in the audit report are categorized here for the reader to review:

Risk Type	Definition
Critical 	These risks could be exploited easily and can lead to asset loss, data loss, asset, or data manipulation. They should be fixed right away.
Major 	These risks are hard to exploit but very important to fix, they carry an elevated risk of smart contract manipulation, which can lead to high-risk severity.
Medium 	These risks should be fixed, as they carry an inherent risk of future exploits, and hacks which may or may not impact the smart contract execution. Low-risk re-entrancy-related vulnerabilities should be fixed to deter exploits.
Minor 	These risks do not pose a considerable risk to the contract or those who interact with it. They are code-style violations and deviations from standard practices. They should be highlighted and fixed nonetheless.
Informational 	These risks pose little severity to the contract or those who interact with it. They should be highlighted nonetheless.

All statuses which are identified in the audit report are categorized here for the reader to review:

Status Type	Definition
Open	Risks are open.
Acknowledged	Risks are acknowledged, but not fixed.
Resolved	Risks are acknowledged and fixed.



CENTRALIZED PRIVILEGES

Centralization risk is the most common cause of cryptography asset loss. When a smart contract has a privileged role, the risk related to centralization is elevated.

There are some well-intended reasons have privileged roles, such as:

- Privileged roles can be granted the power to pause() the contract in case of an external attack.
- Privileged roles can use functions like, include(), and exclude() to add or remove wallets from fees, swap checks, and transaction limits. This is useful to run a presale and to list on an exchange.

Authorizing privileged roles to externally-owned-account (EOA) is dangerous. Lately, centralization-related losses are increasing in frequency and magnitude.

- The client can lower centralization-related risks by implementing below mentioned practices:
- Privileged role's private key must be carefully secured to avoid any potential hack.
- Privileged role should be shared by multi-signature (multi-sig) wallets.
- Authorized privilege can be locked in a contract, user voting, or community DAO can be introduced to unlock the privilege.
- Renouncing the contract ownership, and privileged roles.
- Remove functions with elevated centralization risk.

 Understand the project's initial asset distribution. Assets in the liquidity pair should be locked. Assets outside the liquidity pair should be locked with a release schedule.
















AUTOMATED ANALYSIS

Symbol	Definition
	Function modifies state
	Function is payable
	Function is internal
	Function is private
	Function is important

Venom Staking

```

| **ReentrancyGuard** | Implementation | |||
|  L | <Constructor> | Public ! |  | NO ! |
|||||
| **Context** | Implementation | |||
|  L | _msgSender | Internal  |  | |
|  L | _msgData | Internal  |  | |
|||||
| **Ownable** | Implementation | Context |||
|  L | <Constructor> | Public ! |  | NO ! |
|  L | owner | Public ! |  | NO ! |
|  L | renounceOwnership | Public ! |  | onlyOwner |
|  L | transferOwnership | Public ! |  | onlyOwner |
|  L | _transferOwnership | Internal  |  |  |
|||||
| **Pausable** | Implementation | Context |||
|  L | <Constructor> | Public ! |  | NO ! |
|  L | paused | Public ! |  | NO ! |
|  L | _pause | Internal  |  | whenNotPaused |
|  L | _unpause | Internal  |  | whenPaused |

```



|||||

```

| **IERC20** | Interface | |||
|  L  | totalSupply | External ! | |NO! |
|  L  | balanceOf | External ! | |NO! |
|  L  | transfer | External ! | ● |NO! |
|  L  | allowance | External ! | |NO! |
|  L  | approve | External ! | ● |NO! |
|  L  | transferFrom | External ! | ● |NO! |

```

|||||

```

| **IERC20Metadata** | Interface | IERC20 |||
|  L  | name | External ! | |NO! |
|  L  | symbol | External ! | |NO! |
|  L  | decimals | External ! | |NO! |

```

|||||

```

| **ERC20** | Implementation | Context, IERC20, IERC20Metadata |||


```



```

|  L  | <Constructor> | Public ! | ● |NO! |
|  L  | name | Public ! | |NO! |
|  L  | symbol | Public ! | |NO! |
|  L  | decimals | Public ! | |NO! |
|  L  | totalSupply | Public ! | |NO! |
|  L  | balanceOf | Public ! | |NO! |
|  L  | transfer | Public ! | ● |NO! |
|  L  | allowance | Public ! | |NO! |
|  L  | approve | Public ! | ● |NO! |
|  L  | transferFrom | Public ! | ● |NO! |
|  L  | increaseAllowance | Public ! | ● |NO! |
|  L  | decreaseAllowance | Public ! | ● |NO! |
|  L  | _transfer | Internal 🔒 | ● | |
|  L  | _mint | Internal 🔒 | ● | |
|  L  | _burn | Internal 🔒 | ● | |
|  L  | _approve | Internal 🔒 | ● | |
|  L  | _spendAllowance | Internal 🔒 | ● | |

```






| ^L | _beforeTokenTransfer | Internal  |  | |



| ^L | _afterTokenTransfer | Internal  |  | |



|||||



| ****Address**** | Library | |||



| ^L | isContract | Internal  | | |


| ^L | sendValue | Internal  |  | |


| ^L | functionCall | Internal  |  | |



| ^L | functionCall | Internal  |  | |



| ^L | functionCallWithValue | Internal  |  | |


| ^L | functionCallWithValue | Internal  |  | |

| ^L | functionStaticCall | Internal  | | |

| ^L | functionStaticCall | Internal  | | |



| ^L | functionDelegateCall | Internal  |  | |



| ^L | functionDelegateCall | Internal  |  | |



| ^L | verifyCallResult | Internal  | | |



|||||



| ****SafeERC20**** | Library | |||



| ^L | safeTransfer | Internal  |  | |

| ^L | safeTransferFrom | Internal  |  | |

| ^L | safeApprove | Internal  |  | |


| ^L | safeIncreaseAllowance | Internal  |  | |


| ^L | safeDecreaseAllowance | Internal  |  | |


| ^L | _callOptionalReturn | Private  |  | |


|||||


| ****SafeMath**** | Library | |||

| ^L | tryAdd | Internal  | | |

| ^L | trySub | Internal  | | |

| ^L | tryMul | Internal  | | |


| ^L | tryDiv | Internal  | | |


| ^L | tryMod | Internal  | | |


| ^L | add | Internal  | | |


| ^L | sub | Internal  | | |





| ^L | mul | Internal  | | |

| ^L | div | Internal  | | |

| ^L | mod | Internal  | | |


| ^L | sub | Internal  | | |


| ^L | div | Internal  | | |


| ^L | mod | Internal  | | |


|||||

| ****Math**** | Library | |||

| ^L | max | Internal  | | |



| ^L | min | Internal  | | |

| ^L | average | Internal  | | |

| ^L | ceilDiv | Internal  | | |

|||||


| ****EnumerableSet**** | Library | |||

| ^L | _add | Private   | | |



| ^L | _remove | Private   | | |

| ^L | _contains | Private  | | |


| ^L | _length | Private  | | |


| ^L | _at | Private  | | |

| ^L | _values | Private  | | |


| ^L | add | Internal   | | |

| ^L | remove | Internal   | | |

| ^L | contains | Internal  | | |


| ^L | length | Internal  | | |


| ^L | at | Internal  | | |

| ^L | values | Internal  | | |

| ^L | add | Internal   | | |

| ^L | remove | Internal   | | |

| ^L | contains | Internal  | | |

| ^L | length | Internal  | | |

| ^L | at | Internal  | | |



```

| L | values | Internal 🔒 | | |
| L | add | Internal 🔒 | 🔴 | |
| L | remove | Internal 🔒 | 🔴 | |
| L | contains | Internal 🔒 | | |
| L | length | Internal 🔒 | | |
| L | at | Internal 🔒 | | |
| L | values | Internal 🔒 | | |
|||||
| **IVenom** | Interface | |||
| L | updateRewardsMultiplier | External ! | 🔴 | NO ! |
|||||
| **IVenomRewarder** | Interface | |||
| L | transferRewards | External ! | 🔴 | NO ! |
|||||
| **VenomStaking** | Implementation | Ownable, Pausable, ReentrancyGuard |||
| L | <Constructor> | Public ! | 🔴 | NO ! |
| L | setEndTime | External ! | 🔴 | onlyOwner |
| L | restartPeriod | External ! | 🔴 | onlyOwner |
| L | setRewardCycle | External ! | 🔴 | onlyOwner |
| L | deposit | External ! | 🔴 | nonReentrant whenNotPaused updateReward updateUserList |
| L | withdraw | Public ! | 🔴 | nonReentrant updateReward updateUserList |
| L | UpdateRewardsMultiplier | External ! | 🔴 | onlyOwner |
| L | withdrawAll | External ! | 🔴 | NO ! |
| L | claim | Public ! | 🔴 | nonReentrant updateReward updateUserList |
| L | claimable | External ! | | NO ! |
| L | _safeTransferDividends | Internal 🔒 | 🔴 | |
| L | setRewardRate | External ! | 🔴 | onlyOwner |
| L | setPenaltyFee | External ! | 🔴 | onlyOwner |
| L | setFeeRecipient | External ! | 🔴 | onlyOwner |
| L | _removeUser | Internal 🔒 | 🔴 | |
| L | _checkOrAddUser | Internal 🔒 | 🔴 | |
| L | userCount | External ! | | NO ! |

```



```

|  L | userList | External ! |   | onlyOwner |
|  L | pause    | External ! | ● | onlyOwner |
|  L | unpause   | External ! | ● | onlyOwner |

```

Venom Rewarder

```

| **ReentrancyGuard** | Implementation |   | | |
|  L | <Constructor> | Public ! | ● | NO ! |
|||||
| **Context** | Implementation |   |
|  L | _msgSender | Internal 🔒 |   |
|  L | _msgData   | Internal 🔒 |   |
|||||
| **Ownable** | Implementation | Context |
|  L | <Constructor> | Public ! | ● | NO ! |
|  L | owner       | Public ! |   | NO ! |
|  L | _checkOwner | Internal 🔒 |   |
|  L | renounceOwnership | Public ! | ● | onlyOwner |
|  L | transferOwnership | Public ! | ● | onlyOwner |
|  L | _transferOwnership | Internal 🔒 | ● |
|||||
| **IAccessControl** | Interface |   |
|  L | hasRole | External ! |   | NO ! |
|  L | getRoleAdmin | External ! |   | NO ! |
|  L | grantRole | External ! | ● | NO ! |
|  L | revokeRole | External ! | ● | NO ! |
|  L | renounceRole | External ! | ● | NO ! |
|||||
| **Strings** | Library |   |
|  L | toString | Internal 🔒 |   |
|  L | toHexString | Internal 🔒 |   |
|  L | toHexString | Internal 🔒 |   |
|  L | toHexString | Internal 🔒 |   |

```



|||||

| ****IERC165**** | Interface | |||| ^L | supportsInterface | External ! | |NO ! |

|||||

| ****ERC165**** | Implementation | IERC165 |||| ^L | supportsInterface | Public ! | |NO ! |

|||||

| ****AccessControl**** | Implementation | Context, IAccessControl, ERC165 |||| ^L | supportsInterface | Public ! | |NO ! || ^L | hasRole | Public ! | |NO ! || ^L | _checkRole | Internal 🔒 | | || ^L | _checkRole | Internal 🔒 | | || ^L | getRoleAdmin | Public ! | |NO ! || ^L | grantRole | Public ! | 🔴 | onlyRole || ^L | revokeRole | Public ! | 🔴 | onlyRole || ^L | renounceRole | Public ! | 🔴 |NO ! || ^L | _setupRole | Internal 🔒 | 🔴 | || ^L | _setRoleAdmin | Internal 🔒 | 🔴 | || ^L | _grantRole | Internal 🔒 | 🔴 | || ^L | _revokeRole | Internal 🔒 | 🔴 | |

|||||

| ****IERC20**** | Interface | |||| ^L | totalSupply | External ! | |NO ! || ^L | balanceOf | External ! | |NO ! || ^L | transfer | External ! | 🔴 |NO ! || ^L | allowance | External ! | |NO ! || ^L | approve | External ! | 🔴 |NO ! || ^L | transferFrom | External ! | 🔴 |NO ! |

|||||

| ****IERC20Metadata**** | Interface | IERC20 |||| ^L | name | External ! | |NO ! || ^L | symbol | External ! | |NO ! |


```

|  | decimals | External ! | |NO! |
|||||
| **ERC20** | Implementation | Context, IERC20, IERC20Metadata |||
|  | <Constructor> | Public ! | |NO! |
|  | name | Public ! | |NO! |
|  | symbol | Public ! | |NO! |
|  | decimals | Public ! | |NO! |
|  | totalSupply | Public ! | |NO! |
|  | balanceOf | Public ! | |NO! |
|  | transfer | Public ! | |NO! |
|  | allowance | Public ! | |NO! |
|  | approve | Public ! | |NO! |
|  | transferFrom | Public ! | |NO! |
|  | increaseAllowance | Public ! | |NO! |
|  | decreaseAllowance | Public ! | |NO! |
|  | _transfer | Internal | | |
|  | _mint | Internal | | |
|  | _burn | Internal | | |
|  | _approve | Internal | | |
|  | _spendAllowance | Internal | | |
|  | _beforeTokenTransfer | Internal | | |
|  | _afterTokenTransfer | Internal | | |
|||||
| **Address** | Library | |||
|  | isContract | Internal | | |
|  | sendValue | Internal | | |
|  | functionCall | Internal | | |
|  | functionCall | Internal | | |
|  | functionCallWithValue | Internal | | |
|  | functionCallWithValue | Internal | | |
|  | functionStaticCall | Internal | | |

```



```

|  | functionStaticCall | Internal | | |
|  | functionDelegateCall | Internal | | |
|  | functionDelegateCall | Internal | | |
|  | verifyCallResult | Internal | | |

```

```

| | | | |

```

```

| **IERC20Permit** | Interface | | | | |
|  | permit | External | | | NO |
|  | nonces | External | | | NO |
|  | DOMAIN_SEPARATOR | External | | | NO |

```

```

| | | | |

```

```

| **SafeERC20** | Library | | | |
|  | safeTransfer | Internal | | |
|  | safeTransferFrom | Internal | | |
|  | safeApprove | Internal | | |
|  | safeIncreaseAllowance | Internal | | |
|  | safeDecreaseAllowance | Internal | | |
|  | safePermit | Internal | | |
|  | _callOptionalReturn | Private | | |

```

```

| | | | |

```

```

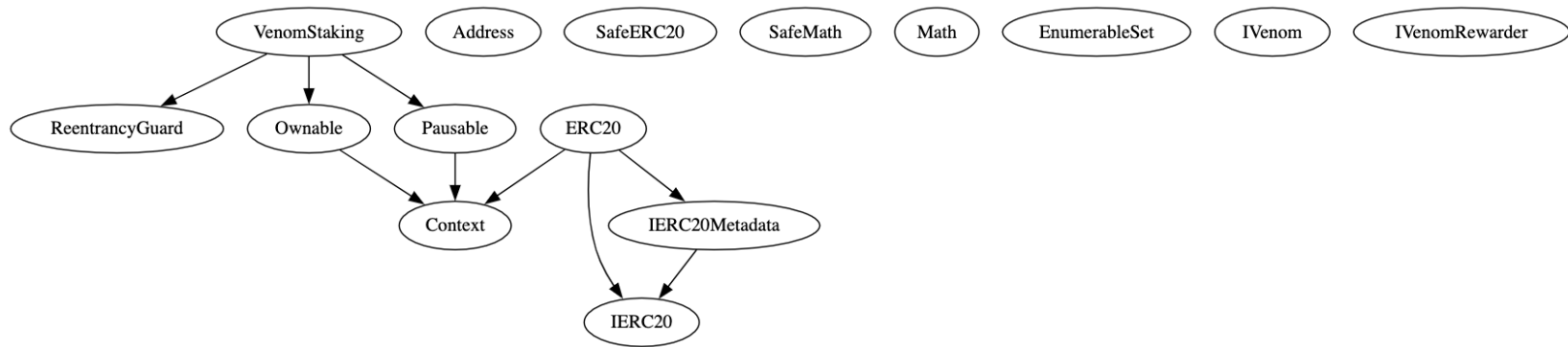
| **VenomRewarder** | Implementation | Ownable, ReentrancyGuard, AccessControl | | | |
|  | <Constructor> | Public | | | NO |
|  | transferRewards | External | | | nonReentrant onlyPool |
|  | withdrawToken | External | | | onlyOwner |
|  | setPool | External | | | onlyOwner |

```

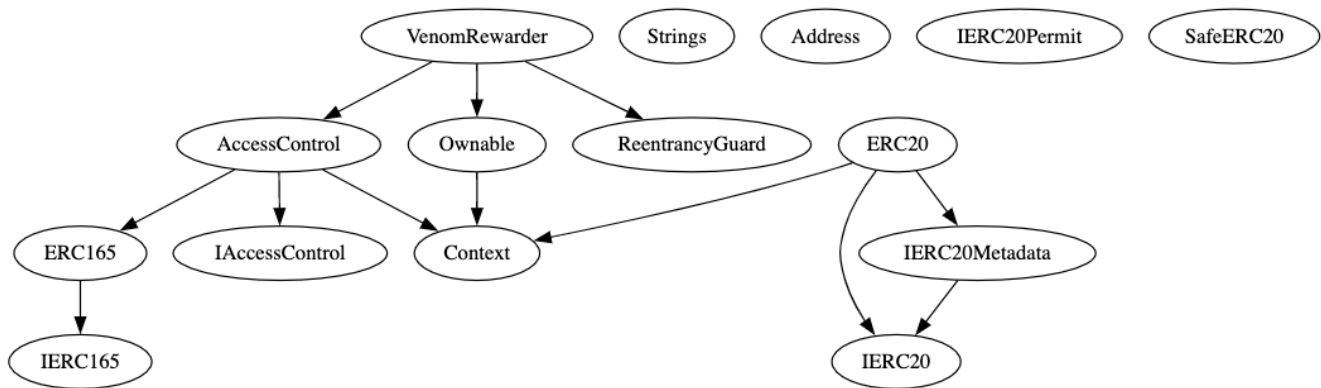


INHERITANCE GRAPH

Venom Staking



Venom Rewarder



MANUAL REVIEW

Identifier	Definition	Severity
CEN-01	Centralization privileges of Venom Staking and Rewarder	Major 🟡

Important centralized privileges are listed below:

Venom Staking

setEndTime()
restartPeriod()
setRewardCycle()
UpdateRewardsMultiplier()
setRewardRate()
setPenaltyFee()
setFeeRecipient()
userList()
pause()
unpause()

Venom Rewarder

transferRewards()
withdrawToken()
setPool()

RECOMMENDATION

Deployer and/or contract owner private keys must be secured carefully. Please refer to PAGE-09 CENTRALIZED PRIVILEGES for a detailed understanding.

RESOLUTION

Venom team has appointed Gnosis multi-sig wallet 0x4d03Ff6f4d19E9b3578E2708b8811ca6D2F32531 as owner for both staking and rewarder contracts.



Identifier	Definition	Severity
CEN-05	Privileged role performing pause contract in Venom Staking	Medium 🟡

In Venom Staking, privileged role can call pause()

```
function pause() external onlyOwner {
    _pause();
}

function unpause() external onlyOwner {
    _unpause();
}
```


RECOMMENDATION

Remove pause, as it can intentionally stop smart contract function modules.

RESOLUTION

Venom team has implemented pause for deposit() only which is activated when staking pool is ended.



Identifier	Definition	Severity
LOG-01	Improper of arbitrary limits	Minor 

Below mentioned functions are set with high or no arbitrary limits.

`UpdateRewardsMultiplier()`

`setPenaltyFee()`

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RECOMMENDATION

These functions should be provided arbitrary limits, e.g., put a require check that allows maximum penalty fee change up to 20%.

ACKNOWLEDGEMENT

Venom team has introduced maximum fee limit; however, the maximum fee can be set up to 50%.



Identifier	Definition	Severity
LOG-03	Inadequate access control and visibility check	Medium 🟡

In Venom Staking, below mentioned functions are used with inadequate access control and visibility check:

```
withdrawAll()
claimable()
updateRewardsMultiplier()
transferRewards()
```

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RECOMMENDATION

Access control interactions, interface calls, external and public calls must be authenticated adequately to avoid possible vulnerabilities.

ACKNOWLEDGEMENT

Venom project team has acknowledged to keep aforementioned functions external. Contract logic requires these functions to be accessible.



Identifier	Definition	Severity
VNM-01	Hardcoded Venom contract address	Minor 

Venom contract address 0x804ea14b08dEc488e5B0bC408f23EEf107fE3717 is hardcoded in Venom Staking contract.

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RECOMMENDATION

Provide a function to change venom contract address if needed in the future.



Identifier	Definition	Severity
COD-04	Improper error messages	Informational ●

In Venom Rewarder, below mentioned require statements should be provided accurate information string:

Lines 1776, 1799, 1830

In Venom Rewarder, below mentioned require statements should be provided accurate information string:

Lines 1529, 1540, 1548

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RECOMMENDATION

Provide accurate information strings for require related errors.

RESOLUTION

Error messages are fixed in the deployed version.



Identifier	Definition	Severity
COD-08	Lack of fallback function	Informational ●

Fallback functions are usually executed in one of the following cases: If a function identifier doesn't match any of the available functions in a smart contract. If there was no data supplied along with the function call.

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RECOMMENDATION

Use fallback function with empty data, and mark it external, and payable.



Identifier	Definition	Severity
COD-10	Third Party Dependencies	Informational ●

Smart contract is interacting with third party protocols e.g., Market Makers, Open Zeppelin. The scope of the audit treats third party entities as black boxes and assumes their functional correctness. However, in the real world, third parties can be compromised, and exploited. Moreover, upgrades in third parties can create severe impacts, e.g., increased transactional fees, deprecation of previous routers, etc.

RECOMMENDATION

Inspect third party dependencies regularly, and mitigate severe impacts whenever necessary.



DISCLAIMERS

InterFi Network provides the easy-to-understand audit of solidity source codes (commonly known as smart contracts).

The smart contract for this particular audit was analyzed for common contract vulnerabilities, and centralization exploits. This audit report makes no statements or warranties on the security of the code. This audit report does not provide any warranty or guarantee regarding the absolute bug-free nature of the smart contract analyzed, nor do they provide any indication of the client's business, business model or legal compliance. This audit report does not extend to the compiler layer, any other areas beyond the programming language, or other programming aspects that could present security risks. Cryptographic tokens are emergent technologies, they carry high levels of technical risks and uncertainty. You agree that your access and/or use, including but not limited to any services, reports, and materials, will be at your sole risk on an as-is, where-is, and as-available basis. This audit report could include false positives, false negatives, and other unpredictable results.

CONFIDENTIALITY

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ABOUT INTERFI NETWORK

InterFi Network provides intelligent blockchain solutions. We provide solidity development, testing, and auditing services. We have developed 150+ solidity codes, audited 1000+ smart contracts, and analyzed 500,000+ code lines. We have worked on major public blockchains e.g., Ethereum, Binance, Cronos, Doge, Polygon, Avalanche, Metis, Fantom, Bitcoin Cash, Velas, Oasis, etc.

InterFi Network is built by engineers, developers, UI experts, and blockchain enthusiasts. Our team currently consists of 4 core members, and 6+ casual contributors.

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