



Cerberus

Smart Contract Security Audit

May, 2021
TechRate

Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as at the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. In order to get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

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The analysis of the security is purely based on the smart contracts alone. No applications or operations were reviewed for security. No product code has been reviewed.

Background

TechRate was commissioned by Cerberus to perform an audit of smart contracts:

- *CerberusReferral* `0xb3566deF601b2dE77d309db03DBDd0080fa8554A`
- *CerberusToken* `0x8B3268a23131DAFBd77165690767F285C1AAC6C5`
- *MasterChef* `0xaAC5636DbDF8e64dD75d44066990B23085dDC39b`
- *Timelock* `0x6E5b0758Fb7Ecb1D37c49F605811B209eea8F4A0`

The purpose of the audit was to achieve the following:

- Ensure that the smart contract functions as intended.
- Identify potential security issues with the smart contract.

The information in this report should be used to understand the risk exposure of the smart contract, and as a guide to improve the security posture of the smart contract by remediating the issues that were identified.

Issues Checking Status

№	Issue description.	Checking status
1	Compiler warnings.	Passed
2	Race conditions and Reentrancy. Cross-function race conditions.	Passed
3	Possible delays in data delivery.	Passed
4	Oracle calls.	Passed
5	Front running.	Passed
6	Timestamp dependence.	Passed
7	Integer Overflow and Underflow.	Passed
8	DoS with Revert.	Passed
9	DoS with block gas limit.	Low issues
10	Methods execution permissions.	Passed
11	Economy model.	Passed
12	The impact of the exchange rate on the logic.	Passed
13	Private user data leaks.	Passed
14	Malicious Event log.	Passed
15	Scoping and Declarations.	Passed
16	Uninitialized storage pointers.	Passed
17	Arithmetic accuracy.	Passed
18	Design Logic.	Passed
19	Cross-function race conditions.	Passed
20	Safe Zeppelin module.	Passed
21	Fallback function security.	Passed

Security Issues

High Severity Issues

No high severity issues found.

Medium Severity Issues

1. Wrong burning

Issue:

There is sending tokens to the dead address in overridden `_transfer` functions, instead of burning them in the token contract.

Recommendation:

There should be a burn instead of sending to the dead address.

Low Severity Issues

1. Block gas limit

Issue:

The `updateEmissionRate` function can fail due to the block gas limit if the pool size is too big.

2. `add` function issue

Issue:

If some LP token is added to the contract twice using function `add`, then the total amount of reward in function `updatePool` will be incorrect.

Recommendation:

Add the mapping from address to bool and check that the same address will not be added twice.

Owner privileges

- ☐ Owner can drain tokens that are sent to the referral contract which is useful for withdrawing tokens sent by mistake to the contract.
- ☐ Owner can change the operator of the referral contract.
- ☐ Operator can change the transfer tax rate to a maximum 10%.
- ☐ Operator can change the burn rate to a maximum 10%.
- ☐ Operator can change the max transfer amount rate.
- ☐ Operator can change the min amount to liquify.

- ❑ Operator can change the router and pair contract addresses, which could be not audited contract

Conclusion

Smart contracts contain medium severity issues and owner privileges!

Techrate note:

Please check the disclaimer above and note, the audit makes no statements or warranties on business model, investment attractiveness or code sustainability. The report is provided for the only contract mentioned in the report and does not include any other potential contracts deployed by Owner.