HackSafe

Smart Contract Security Audit Report

PepeMoon

November 2022

Security Status

★★★★☆

www.hacksafe.io

Audit Details

Audited project
PepeMoon

Deployer address
0x0d2561a4c0e7d931af1c2ef9ab0f4e84035ec4f0

Client contacts
PepeMoon Team

Blockchain
Binance smart chain

Website
Not provided

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.

Procedure

Step 1 - In-Depth Manual Review

Manual line-by-line code reviews to ensure the logic behind each function is sound and safe from various attack vectors. This is the most important and lengthy portion of the audit process (as automated tools often cannot find the nuances that lead to exploits such as flash loan attacks).

Step 2 - Automated Testing

Simulation of a variety of interactions with your Smart Contract on a test blockchain leveraging a combination of automated test tools and manual testing to determine if any security vulnerabilities exist.

Step 3 – Leadership Review

The engineers assigned to the audit will schedule meetings with our leadership team to review the contracts, any comments or findings, and ask questions to further apply adversarial thinking to discuss less common attack vectors.

Step 4 - Resolution of Issues

Consulting with the team to provide our recommendations to ensure the code's security and optimize its gas efficiency, if possible. We assist project team's in resolving any outstanding issues or implementing our recommendations.

Step 5 - Published Audit Report

Boiling down results and findings into an easy-to-read report tailored to the project. Our audit reports highlight resolved issues and any risks that exist to the project or its users, along with any remaining suggested remediation measures. Diagrams are included at the end of each report to help users understand the interactions which occur within the project.

Background

HackSafe was commissioned by PepeMoon to perform an audit of smart contracts:

- https://bscscan.com/token/0xa5AC8f8E90762380cCE6C16ABa17Ed6d2Cf75888#code

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 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.

Contract Details

Token contract details for 29.11.2022

Token Type	: DEFI
Contract name	: PepeMoon
Contract address	: 0xa5AC8f8E90762380cCE6C16ABa17Ed6d2Cf75888
Total supply	: 100,000,000,000
Token ticker	: PEPE
Decimals	: 9
Token Holders	: 6,635
Transactions count	: 25,145
Compiler version	: v0.6.2+commit.bacdbe57
Contract deployer address	: 0x0d2561a4c0e7d931af1c2ef9ab0f4e84035ec4f0
Owner address	: 0x0000000000000000000000000000000000000000

Audit Summary

According to the standard audit assessment, Customer`s solidity smart contracts are **“Secure”.** This token contract does not contain owner control as ownership has been renounced, which do make it fully decentralized as owner does not have control over smart contract.

Insecure	Poor secured	Secure	Well-secured

You are here 

We used various tools like Slither, Mythril and Remix IDE. At the same time this finding is based on critical analysis of the manual audit. All issues found during automated analysis were manually reviewed and applicable vulnerabilities are presented in the issues checking status.

We found 0 critical, 0 high, 1 medium and 1 low.

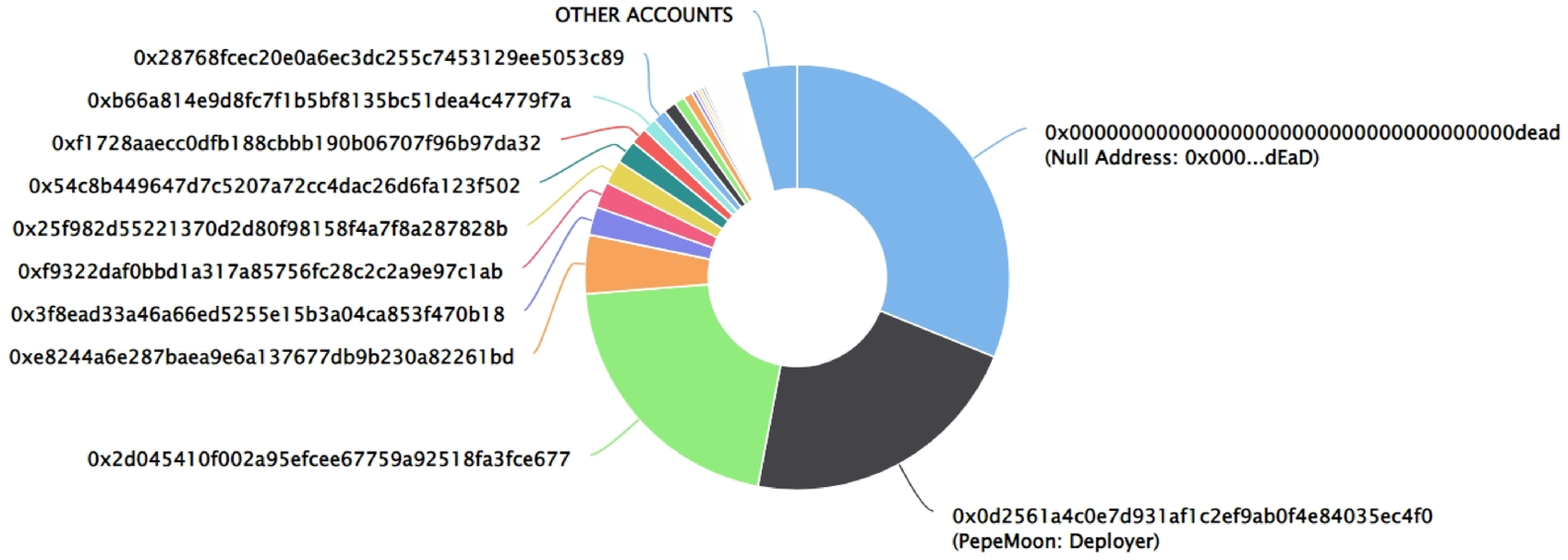
PepeMoon Distribution

The top 100 holders collectively own 95.76% (95,761,576,411.75 Tokens) of PepeMoon

Token Total Supply: 100,000,000,000.00 Token | Total Token Holders: 6,635

PepeMoon Top 100 Token Holders

Source: BscScan.com



PepeMoon Top 20 Token Holders

(A total of 95,761,576,411.75 tokens held by the top 100 accounts from the total supply of 100,000,000,000.00 token)

Rank	Address	Quantity (Token)	Percentage
1	Null Address: 0x000...dEaD	31,112,718,581.303080679	31.1127%
2	PepeMoon: Deployer	21,874,117,821.880890638	21.8741%
3	0x2d045410f002a95efcee67759a92518fa3fce677	20,777,841,364.135525865	20.7778%
4	0xe8244a6e287baea9e6a137677db9b230a82261bd	4,475,034,681.861646447	4.4750%
5	0x3f8ead33a46a66ed5255e15b3a04ca853f470b18	2,127,563,808.839399014	2.1276%
6	0xf9322daf0bbd1a317a85756fc28c2c2a9e97c1ab	1,981,337,703.141146049	1.9813%
7	0x25f982d55221370d2d80f98158f4a7f8a287828b	1,817,641,384.241550876	1.8176%
8	0x54c8b449647d7c5207a72cc4dac26d6fa123f502	1,813,777,581.842598423	1.8138%
9	0xf1728aaecc0dfb188cbbb190b06707f96b97da32	1,242,154,880.996700625	1.2422%
10	0xb66a814e9d8fc7f1b5bf8135bc51dea4c4779f7a	1,057,176,668.974653909	1.0572%
11	0x28768fcec20e0a6ec3dc255c7453129ee5053c89	1,005,045,607.687668577	1.0050%
12	0xa13517994d3eee5353dfb4e613439057ed3fca08	964,622,509.032440404	0.9646%
13	0xc7a09c2b6b566d20c10e1b3973c619e7f760f322	781,187,824.791863427	0.7812%
14	0x1872c1bbb51c9d1129420f8baa4e6b7ddef79dfb	710,980,170.647907501	0.7110%
15	0xe54bdce182a08d86c86f0b2abf532ed9cc7fcb66	292,612,302.940333749	0.2926%
16	0xb0496c8834af413b4c56d796ea6870f30a6c4aa1	230,779,405.758238552	0.2308%
17	0xa9106b5044084ed7425d7ada0a8c3c0d393d6d70	212,974,635.861657729	0.2130%
18	0x1a13b39e5c5dd5882a3c95af904e297400f79267	204,855,519.178414417	0.2049%
19	0x27c71a2a64a8d3204b0119153b69b3f94ad1f241	189,784,707.169248675	0.1898%
20	0xe5f380c6e1934c812785d4d8209a255e14f4d97a	134,412,053.666414706	0.1344%

PepeMoon Distribution

PepeMoon Overview

Contract functions details

+[Lib] SafeMath
    -[Int] add
    -[Int] sub
    -[Int] sub
    -[Int] mul
    -[Int] div
    -[Int] div
    -[Int] mod
    -[Int] mod

+Context
    -[Int] _msgSender
    -[Int] _msgData

+[Int] IERC20
    -[Ext] totalSupply
    -[Ext] balanceOf
    -[Ext] transfer
    -[Ext] allowance
    -[Ext] approve
    -[Ext] transferFrom

+[Lib] Address
    -[Int] isContract
    -[Int] sendValue
    -[Int] functionCall
    -[Int] functionCall
    -[Int] functionCallWithValue
    -[Int] functionCallWithValue
    -[Pvt] _functionCallWithValue

+Ownable (Context)
    -[Int] <constructor>
    -[Pub] owner
    -[Pub] renounceOwnership #
      -modifiers: onlyOwner
    -[Pub] transferOwnership #
      -modifiers: onlyOwner

+PepeMoon (Context, IERC20, Ownable)
    -[Pub] <constructor>

Contract functions details

-[Ext] disableLimitMode #
  -modifiers: onlyOwner
-[Ext] enableLimitMode #
  -modifiers: onlyOwner
-[Pub] name
-[Pub] symbol
-[Pub] decimals
-[Pub] totalSupply
-[Pub] balanceOf
-[Pub] transfer #
-[Pub] allowance
-[Pub] approve #
-[Pub] transferFrom #
-[Pub] increaseAllowance #
-[Pub] decreaseAllowance #
-[Pub] isExcluded
-[Pub] totalFees
-[Ext] setFeePercent #
  -modifiers: onlyOwner
-[Pub] diffract #
-[Pub] diffractionFromToken #
-[Pub] tokenFromdiffraction #
-[Ext] excludeAccount #
  -modifiers: onlyOwner
-[Ext] includeAccount #
  -modifiers: onlyOwner
-[Pvt] _approve #
-[Pvt] _transfer #
-[Pvt] _transferStandard #
-[Pvt] _transferToExcluded #
-[Pvt] _transferFromExcluded #
-[Pvt] _transferBothExcluded #
-[Pvt] _diffractFee #
-[Pvt] _getValues
-[Pvt] _getTValues
-[Pvt] _getRValues
-[Pvt] _getRate
-[Pvt] _getCurrentSupply

Contract functions details

($) = payable function
= non-constant function

Issues Checking Status

No.	Title	Status
1.	Unlocked Compiler Version	Passed
2.	Missing Input Validation	Passed
3.	Race conditions and Reentrancy. Cross-function race conditions.	Passed
4.	Possible delays in data delivery	Passed
5.	Oracle calls.	Passed
6.	Timestamp dependence.	Passed
7.	Integer Overflow and Underflow	Passed
8.	DoS with Revert.	Passed
9.	DoS with block gas limit.	Medium issue
10.	Methods execution permissions.	Passed
11.	Economy model of the contract.	Passed
12.	Private use data leaks.	Passed
13.	Malicious Event log.	Passed
14.	Scoping and Declarations.	Passed
15.	Uninitialized storage pointers.	Passed
16.	Arithmetic accuracy.	Passed
17.	Design Logic.	Passed
18.	Safe Open Zeppelin contracts implementation and usage.	Passed
19.	Incorrect Naming State Variable	Passed
20.	Too old version	Low issue

Severity Definitions

Risk Level	Description
Critical	Critical vulnerabilities are usually straightforward to exploit and can lead to assets loss or data manipulations.
High	High-level vulnerabilities are difficult to exploit; however, they also have a significant impact on smart contract execution, e.g., public access to crucial functions
Medium	Medium-level vulnerabilities are important to fix; however, they can't lead to assets loss or data manipulations.
Low	Low-level vulnerabilities are mostly related to outdated, unused, etc. code snippets that can't have a significant impact on execution.

Security Issues

Critical Severity Issues

No critical severity issue found.

High Severity Issues

No high severity issue found.

Medium Severity Issues

One medium severity issue found.

1. Out of gas limit

- **Description**

  The function includeInReward() uses the loop to find and remove addresses from the _excluded list. Function will be aborted with OUT_OF_GAS exception if there will be a long excluded addresses list.

  The function _getCurrentSupply also uses the loop for evaluating total supply. It also could be aborted with OUT_OF_GAS exception if there will be a long excluded addresseses list.

- **Recommendation**

  Use EnumerableSet instead of array or do not use long arrays.

Low Severity Issues

One low severity issue found.

1. Old compiler version

- **Description**

  Contract has been deployed using too old solidity version.

- **Recommendation**

  It is advisable to deploy contract using any of the latest version of solidity

Centralization

Owner Privileges :

- PepeMoon Contract:
    - Owner can renounce and transfer ownership.
    - Owner can disable and enable limit mode.
    - Owner can exclude and include account.
    - Owner can set fee percent.

This smart contract has some functions which can be executed by the admin (Owner) only. If the admin wallet private key would be compromised, then it would create trouble but smart contract ownership has been renounced. Following are Admin functions:

- disableLimitMode
- enableLimitMode
- setFeePercent
- excludeAccount
- includeAccount
- transferOwnership
- renounceOwnership

Conclusion

Smart contract contains low and medium severity issues! The further transfer and operations with the fund raised are not related to this particular contract.

HackSafe 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.