HackSafe

Smart Contract Security Audit Report

Moon Pug

March 2023

Security Status

★★★★☆

www.hacksafe.io

Audit Details

Audited project
Moon Pug

Deployer address
0x866cf3F48e29Bb7D09a706591Aaf7eaA8E7DD78E

Client contacts
Moon Pug team

Blockchain
Ethereum

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 Moon Pug to perform an audit of smart contracts:

- https://etherscan.io/address/0x856710ea0007af7bdc387fe54f64db51dddaf0a2#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 03.03.2023

Token Type	: DEFI
Contract name	: Moon Pug
Contract address	: 0x856710eA0007aF7bdC387Fe54f64Db51DdDAf0a2
Total supply	: 100,000,000,000,000,000
Token ticker	: MOONPUG
Decimals	: 9
Token Holders	: 584
Top 100 token holder's dominance	: 94.58 %
Transactions count	: 3,381
Compiler version	: v0.6.12+commit.27d51765
Contract deployer address	: 0x866cf3F48e29Bb7D09a706591Aaf7eaA8E7DD78E
Contract owner address	: 0x0000000000000000000000000000000000000000

Social profiles

Twitter profile	: https://twitter.com/moonpugnetwork
Telegram profile	: https://t.me/officialmoonpug
Medium Profile	: https://medium.com/@moonpugtoken
Discord Profile	: https://discord.com/invite/aHPUPV6CM5
Coinmarketcap profile	: Not Given
Coingecko profile	: Not Given

Claimed Smart Contract Features

Claimed Feature Detail	Our Observation
Tokenomics : • **Name** : MoonPug • **Symbol** : MOONPUG • **Decimals** : 9 • **Protocol** : DEFI • **Total supply** : 100,000,000,000,000,000 • **Contract address** : 0x856710eA0007aF7bdC387Fe54f64Db51DdDAf0a2	YES, this is valid.

Audit Summary

According to the standard audit assessment, Customer`s solidity smart contracts are “**Secure**”. This token contract does not contain owner control, 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 0 low and some very low-level issues. These issues are not critical ones.

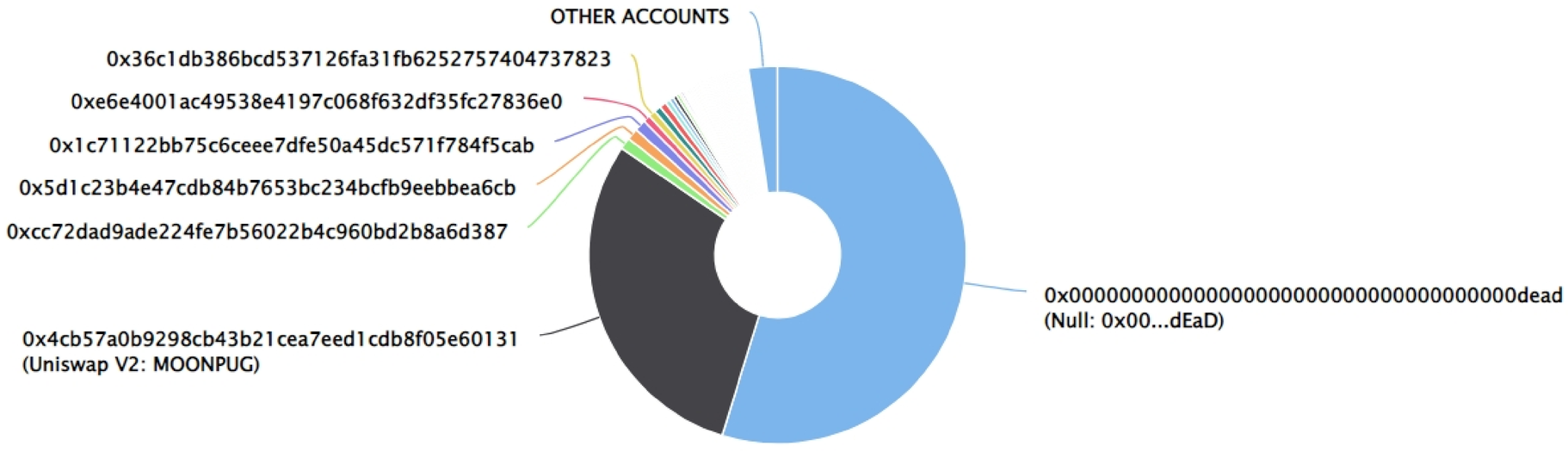
Moon Pug Token Distribution

The top 100 holders collectively own 97.51% (97,510,138,446,364,500.00 Tokens) of Moon Pug

Token Total Supply: 100,000,000,000,000,000.00 Token | Total Token Holders: 584

Moon Pug Top 100 Token Holders

Source: Etherscan.io



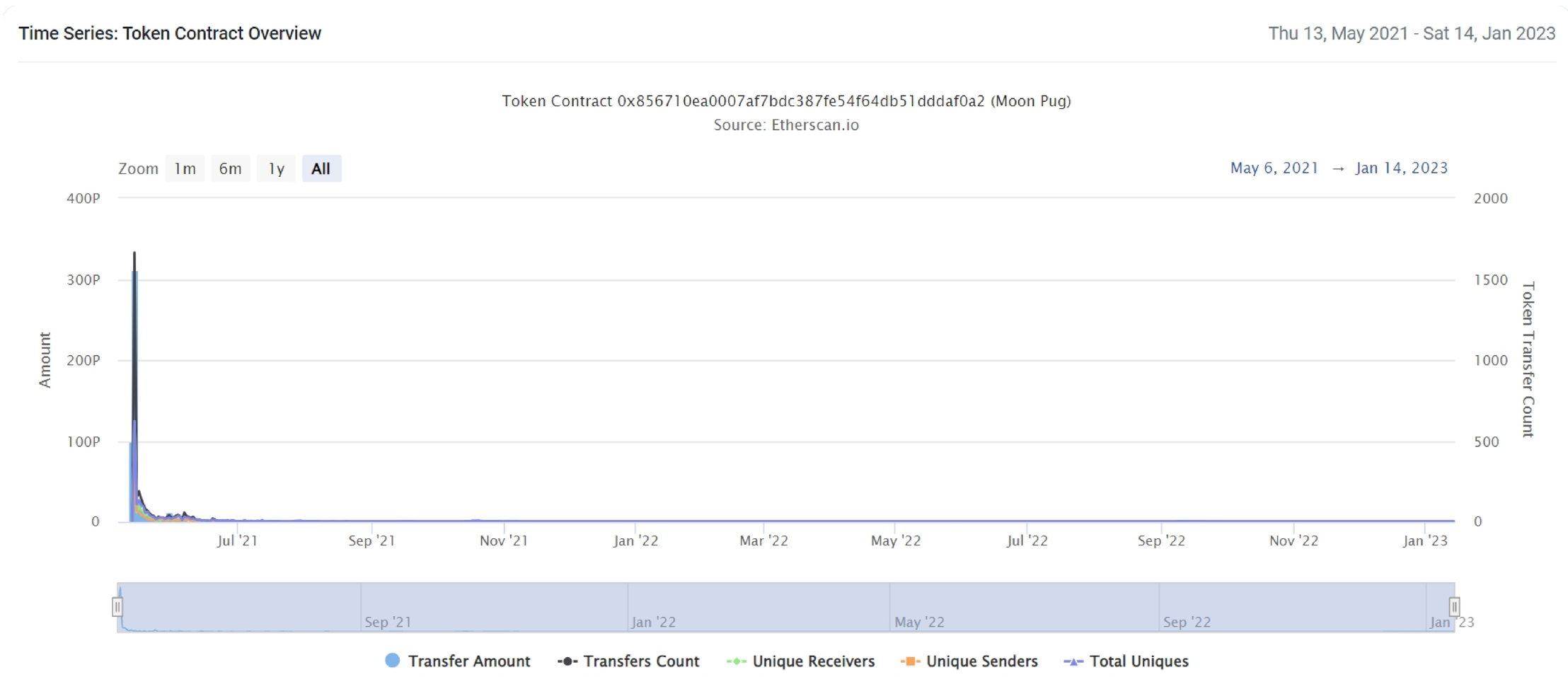
Moon Pug Top 20 Token Holders

(A total of 97,510,138,446,364,500.00 tokens held by the top 100 accounts from the total supply of 100,000,000,000,000,000.00 token)

Rank	Address	Quantity (Token)	Percentage
1	Null: 0x00...dEaD	54,764,593,976,755,843.834257616	54.7646%
2	Uniswap V2: MOONPUG	29,775,478,480,507,563.728668318	29.7755%
3	0xcc72dA...B8a6d387	1,000,040,025,434,720.967417436	1.0000%
4	0x5d1c23...ebBEA6CB	993,954,339,424,298.666047331	0.9940%
5	0x1C7112...784f5CaB	986,103,085,249,874.82155258	0.9861%
6	0xe6e400...c27836e0	614,535,978,439,000.088404155	0.6145%
7	0x36C1DB...04737823	607,211,224,204,662.526070215	0.6072%
8	0x818E13...D7cB0134	593,715,674,483,647.249043138	0.5937%
9	0x89b62E...879050A2	572,362,795,418,770.970710184	0.5724%
10	0xA274a4...b09C13f7	413,264,179,478,101.146106306	0.4133%
11	0xc09F66...cB95d5cb	345,352,012,408,654.117425725	0.3454%
12	0xbAB4E2...a846090C	336,568,860,551,588.23689172	0.3366%
13	0x8ffAE7...111f8495	263,149,981,507,970.427604914	0.2631%
14	0xfD85bB...c8073953	193,027,133,107,810.455153547	0.1930%
15	0xaA92F6...165470B3	189,199,587,590,734.785141773	0.1892%
16	0xaE8Bf0...c9B09e2F	185,187,644,882,007.57776971	0.1852%
17	0xE2baCB...e308AaC4	177,743,577,459,556.241644491	0.1777%
18	0x2521B9...52451046	175,594,209,309,953.474044981	0.1756%
19	0x5b6684...5515dBe3	160,758,709,543,835.581747767	0.1608%
20	0x57dA97...092af1eA	158,085,582,629,603.901475298	0.1581%

Moon Pug Token Distribution

Moon Pug Token Contract overview



Contract functions details

+Context

- [Int] _msgSender
- [Int] _msgData

+[Int] IERC20

- [Ext] totalSupply
- [Ext] balanceOf
- [Ext] transfer #
- [Ext] allowance
- [Ext] approve #
- [Ext] transferFrom #

+[Lib] SafeMath

- [Int] add
- [Int] sub
- [Int] sub
- [Int] mul
- [Int] div
- [Int] div
- [Int] mod
- [Int] mod

+[Lib] Address

- [Ext] createPair #

+ [Int] IDEXRouter

- [Ext] isContract
- [Ext] sendValue #
- [Ext] functionCall #
- [Ext] functionCall #
- [Ext] functionCallWithValue #
- [Ext] functionCallWithValue #
- [Ext] _functionCallWithValue #

+Ownable (Context)

- [Int] <Constructor> #
- [pub] owner
- [Pub] renounceOwnership #
  - modifiers: onlyOwner
- [Pub] transferOwnership #
  - modifiers: onlyOwner

Contract functions details

+MoonPug (Context, IERC20, Ownable)+Context
- [Pub] <Constructor> #
- [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] setMaxTxPercent #
  - modifiers: onlyOwner
- [Pub] reflect #
- [Pub] reflectionFromToken
- [Pub] tokenFromReflection
- [Ext] includeAccount #
  - modifiers: onlyOwner
- [Ext] excludeAccount #
  - modifiers: onlyOwner
- [Pvt] _approve #
- [Pvt] _transfer #
- [Pvt] _transferStandard #
- [Pvt] _transferToExcluded #
- [Pvt] _transferFromExcluded #
- [Pvt] _transferBothExcluded #
- [Pvt] _reflectFee #
- [Pvt] _getCurrentSupply
- [Pvt] _getValues
- [Pvt] _getRValues
- [Pvt] _getTValues
- [Pvt] _getRate

($) = payable function
= non-constant function

Issues Checking Status

No.	Title	Status
1.	Compiler error	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	Passed

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

- **Issue:**

  The function includeAccount() 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 addresses list.

- **Recommendation**

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

- **Low Severity Issues**
  No low severity issue found.

Centralization

Owner privileges (In the period when the owner is not renounced)

- Moon Pug Token Contract:
    - Owner can change the maximum transaction amount.

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 not create trouble as smart contract ownership has been renounced.

Conclusion

Smart contract contains 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.