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AUDIT COMPANY

# Smart Contract Security Audit

TechRate

May, 2021

# Audit Details

Audited project

**Martian**

Deployer address

**0xad2e61cc69ef1fc1da5d1af60a6916cdf658632c**

Client contacts:

**Martian team**

Blockchain

**Binance Smart Chain**

Project 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.

# Background

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

- https://bscscan.com/address/0xca167f0a8eb9f91b31d40134ce1cc3b8baf4d72f#code
- https://bscscan.com/address/0xA7bA700f1b134231133F44Fc1056cD2Fc8ac18C5#code
- https://bscscan.com/address/0x842308Ee4Fc31884C4e98D1653c6006Fd1046505#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 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.

# Contracts Details

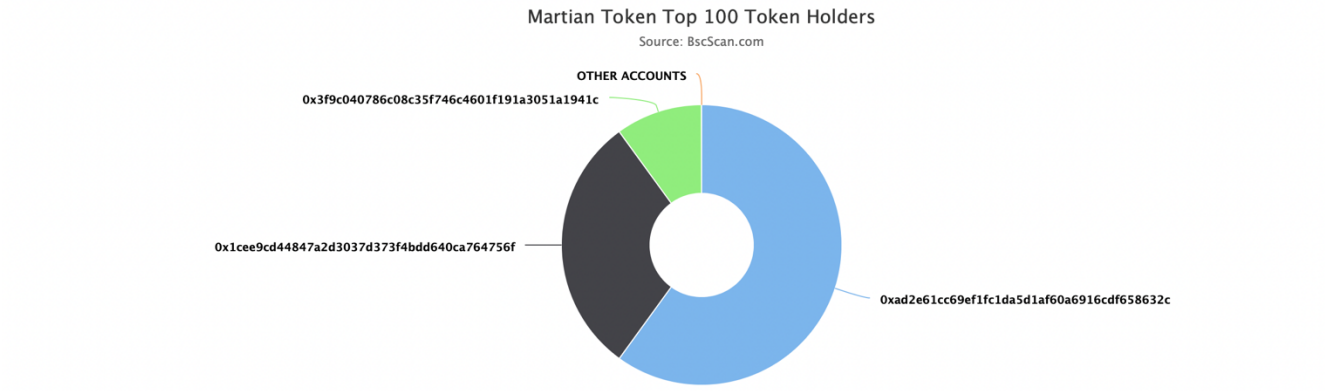
## Token contract details for 29.05.2021

| | |
|---|---|
| Contract name | Martian |
| Contract address | 0xca167f0a8eb9f91b31d40134ce1cc3b8baf4d72f |
| Total supply | 250,000 |
| Token ticker | MARTIAN |
| Decimals | 18 |
| Token holders | 3 |
| Transactions count | 3 |
| Top 100 holders dominance | 100 % |
| Contract deployer address | 0xad2e61cc69ef1fc1da5d1af60a6916cdf658632c |
| Contract's current owner address | 0xad2e61cc69ef1fc1da5d1af60a6916cdf658632c |

# Martian Token Distribution

The top 100 holders collectively own 100.00% (250,000.00 Tokens) of Martian Token

Token Total Supply: 250,000.00 Token | Total Token Holders: 3

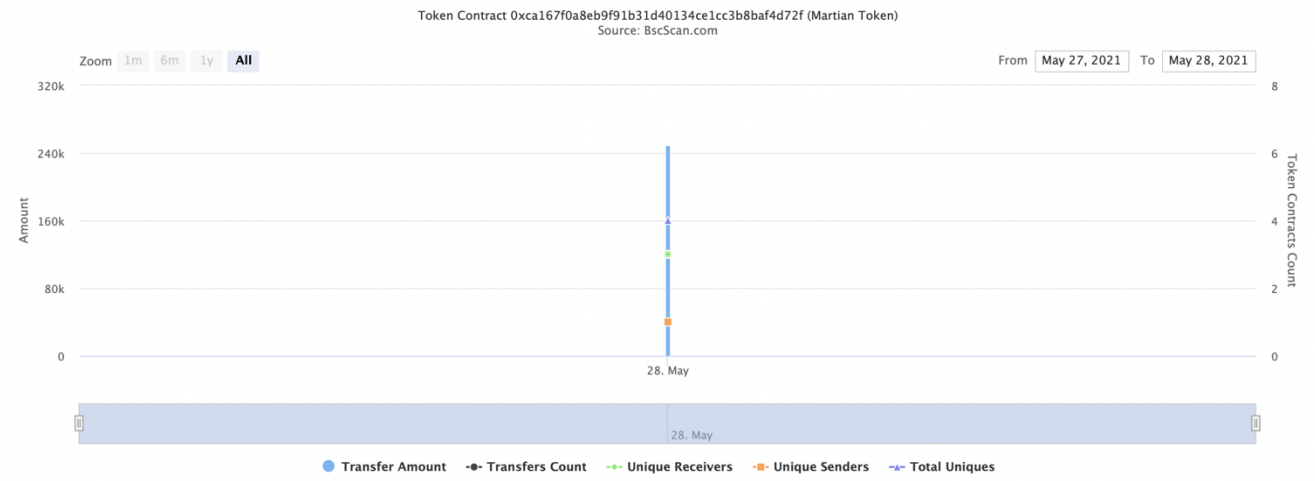



(A total of 250,000.00 tokens held by the top 100 accounts from the total supply of 250,000.00 token)

# Martian Contract Interaction Details

Time Series: Token Contract Overview

Fri 28, May 2021 - Fri 28, May 2021



# Martian Top 10 Token Holders

| Rank | Address | Quantity (Token) | Percent |
|---|---|---|---|
| 1. | 0xad2e61cc69ef1fc1da5d1af60a6916cdf658632c | 150,000 | 60% |
| 2. | 0x1cee9cd44847a2d3037d373f4bdd640ca764756f | 75,000 | 30% |
| 3. | 0x3f9c040786c08c35f746c4601f191a3051a1941c | 25,000 | 10% |

# MasterChef functions details

+ [Int] IBEP20
  - [Ext] totalSupply
  - [Ext] decimals
  - [Ext] symbol
  - [Ext] name
  - [Ext] getOwner
  - [Ext] balanceOf
  - [Ext] transfer #
  - [Ext] allowance
  - [Ext] approve #
  - [Ext] transferFrom #

+ [Lib] SafeMath
  - [Int] tryAdd
  - [Int] trySub
  - [Int] tryMul
  - [Int] tryDiv
  - [Int] tryMod
  - [Int] add
  - [Int] sub
  - [Int] mul
  - [Int] div
  - [Int] mod
  - [Int] sub
  - [Int] div
  - [Int] mod

+ [Lib] Address
  - [Int] isContract
  - [Int] sendValue #
  - [Int] functionCall #
  - [Int] functionCall #
  - [Int] functionCallWithValue #
  - [Int] functionCallWithValue #
  - [Int] functionStaticCall
  - [Int] functionStaticCall
  - [Int] functionDelegateCall #
  - [Int] functionDelegateCall #
  - [Prv] _verifyCallResult

+ [Lib] SafeBEP20
  - [Int] safeTransfer #
  - [Int] safeTransferFrom #
  - [Int] safeApprove #

  - [Int] safeIncreaseAllowance #
  - [Int] safeDecreaseAllowance #
  - [Prv] _callOptionalReturn #

+ [Int] IMartianReferral
  - [Ext] recordReferral #
  - [Ext] recordReferralCommission #
  - [Ext] getReferrer

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

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

+ ReentrancyGuard
  - [Int] <Constructor> #

+ BEP20 (Context, IBEP20, Ownable)
  - [Pub] <Constructor> #
  - [Ext] getOwner
  - [Pub] name
  - [Pub] decimals
  - [Pub] symbol
  - [Pub] totalSupply
  - [Pub] balanceOf
  - [Pub] transfer #
  - [Pub] allowance
  - [Pub] approve #
  - [Pub] transferFrom #
  - [Pub] increaseAllowance #
  - [Pub] decreaseAllowance #
  - [Pub] mint #
    - modifiers: onlyOwner
  - [Int] _transfer #
  - [Int] _mint #
  - [Int] _burn #
  - [Int] _approve #
  - [Int] _burnFrom #

+ [Int] IUniswapV2Router01
  - [Ext] factory

  - [Ext] WETH
  - [Ext] addLiquidity #
  - [Ext] addLiquidityETH ($)
  - [Ext] removeLiquidity #
  - [Ext] removeLiquidityETH #
  - [Ext] removeLiquidityWithPermit #
  - [Ext] removeLiquidityETHWithPermit #
  - [Ext] swapExactTokensForTokens #
  - [Ext] swapTokensForExactTokens #
  - [Ext] swapExactETHForTokens ($)
  - [Ext] swapTokensForExactETH #
  - [Ext] swapExactTokensForETH #
  - [Ext] swapETHForExactTokens ($)
  - [Ext] quote
  - [Ext] getAmountOut
  - [Ext] getAmountIn
  - [Ext] getAmountsOut
  - [Ext] getAmountsIn

+ [Int] IUniswapV2Router02 (IUniswapV2Router01)
  - [Ext] removeLiquidityETHSupportingFeeOnTransferTokens #
  - [Ext] removeLiquidityETHWithPermitSupportingFeeOnTransferTokens #
  - [Ext] swapExactTokensForTokensSupportingFeeOnTransferTokens #
  - [Ext] swapExactETHForTokensSupportingFeeOnTransferTokens ($)
  - [Ext] swapExactTokensForETHSupportingFeeOnTransferTokens #

+ [Int] IUniswapV2Pair
  - [Ext] name
  - [Ext] symbol
  - [Ext] decimals
  - [Ext] totalSupply
  - [Ext] balanceOf
  - [Ext] allowance
  - [Ext] approve #
  - [Ext] transfer #
  - [Ext] transferFrom #
  - [Ext] DOMAIN_SEPARATOR
  - [Ext] PERMIT_TYPEHASH
  - [Ext] nonces
  - [Ext] permit #
  - [Ext] MINIMUM_LIQUIDITY
  - [Ext] factory
  - [Ext] token0
  - [Ext] token1
  - [Ext] getReserves
  - [Ext] price0CumulativeLast
  - [Ext] price1CumulativeLast
  - [Ext] kLast

  - [Ext] mint #
  - [Ext] burn #
  - [Ext] swap #
  - [Ext] skim #
  - [Ext] sync #
  - [Ext] initialize #

+ [Int] IUniswapV2Factory
  - [Ext] feeTo
  - [Ext] feeToSetter
  - [Ext] getPair
  - [Ext] allPairs
  - [Ext] allPairsLength
  - [Ext] createPair #
  - [Ext] setFeeTo #
  - [Ext] setFeeToSetter #

+ MartianToken (BEP20)
  - [Pub] <Constructor> #
    - modifiers: BEP20
  - [Pub] mint #
    - modifiers: onlyOwner
  - [Int] _transfer #
    - modifiers: antiWhale
  - [Prv] swapAndLiquify #
    - modifiers: lockTheSwap,transferTaxFree
  - [Prv] swapTokensForEth #
  - [Prv] addLiquidity #
  - [Pub] maxTransferAmount
  - [Pub] isExcludedFromAntiWhale
  - [Ext] <Fallback> ($)
  - [Pub] updateTransferTaxRate #
    - modifiers: onlyOperator
  - [Pub] updateBurnRate #
    - modifiers: onlyOperator
  - [Pub] updateMaxTransferAmountRate #
    - modifiers: onlyOperator
  - [Pub] updateMinAmountToLiquify #
    - modifiers: onlyOperator
  - [Pub] setExcludedFromAntiWhale #
    - modifiers: onlyOperator
  - [Pub] updateSwapAndLiquifyEnabled #
    - modifiers: onlyOperator
  - [Pub] updateMartianSwapRouter #
    - modifiers: onlyOperator
  - [Pub] operator
  - [Pub] transferOperator #
    - modifiers: onlyOperator

  - [Ext] delegates
  - [Ext] delegate #
  - [Ext] delegateBySig #
  - [Ext] getCurrentVotes
  - [Ext] getPriorVotes
  - [Int] _delegate #
  - [Int] _moveDelegates #
  - [Int] _writeCheckpoint #
  - [Int] safe32
  - [Int] getChainId

+ MasterChef (Ownable, ReentrancyGuard)
  - [Pub] <Constructor> #
  - [Ext] poolLength
  - [Pub] add #
    - modifiers: onlyOwner
  - [Pub] set #
    - modifiers: onlyOwner
  - [Pub] getMultiplier
  - [Ext] pendingMartian
  - [Pub] canHarvest
  - [Pub] massUpdatePools #
  - [Pub] updatePool #
  - [Pub] deposit #
    - modifiers: nonReentrant
  - [Pub] withdraw #
    - modifiers: nonReentrant
  - [Pub] emergencyWithdraw #
    - modifiers: nonReentrant
  - [Int] payOrLockupPendingMartian #
  - [Int] safeMartianTransfer #
  - [Pub] setDevAddress #
  - [Pub] setFeeAddress #
  - [Pub] setCommunityVault #
  - [Pub] updateEmissionRate #
    - modifiers: onlyOwner
  - [Pub] setMartianReferral #
    - modifiers: onlyOwner
  - [Pub] setReferralCommissionRate #
    - modifiers: onlyOwner
  - [Int] payReferralCommission #


($) = payable function
# = non-constant function

# Issues Checking Status

| | Issue description | Checking status |
|---|---|---|
| 1. | Compiler errors. | 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 of the contract. | 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. | Medium issues |
| 19. | Cross-function race conditions. | Passed |
| 20. | Safe Open Zeppelin contracts implementation and usage. | 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 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 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 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 maximum 10%.
- Operator can change the burn rate to 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 and low severity issues.**

***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.***