

TechRate  
August, 2023



# SMART CONTRACTS SECURITY AUDIT REPORT



Techrate\_audits



Techrate



Techrate1

# Audit Details



Audited project

Space Alpaca



Deployer address

0xd3c2e3f917cFf22678205B130B264B76d47Da65F



Client contacts:

Space Alpaca team



Blockchain

Binance Smart Chain



Project website:

<https://www.space-alpaca.com>

# 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 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 Space Alpaca to perform an audit of smart contracts:**

<https://bscscan.com/address/0xcd04a5899bc5386d2ce3e95489671aa30713f2ac#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 20.08.2023

**Contract name** spal\_v2\_bsc.sol

**Contract address** 0xcd04A5899BC5386D2ce3E95489671aA30713F2ac

**Total supply** 500,000,000

**Token ticker** SPAL

**Decimals** 18

**Token holders** 2

**Transactions count** 2

**Top 100 holders dominance** 100.00%

**Total fees** 0

**Buyback address** 0x1AbB2EdA7cFe84Eb39753E3113dA28C9fB265BAf

**Marketing address** 0x50e0EbDC2650C3EDD296586247491e3eF3339FC8

**PCS V2 Pair** 0x89b3726f75bf408122B8777Ea4EcC8f0b802f9ba

**Contract deployer address** 0xd3c2e3f917cFf22678205B130B264B76d47Da65F

**Owner address** 0xd3c2e3f917cFf22678205B130B264B76d47Da65F

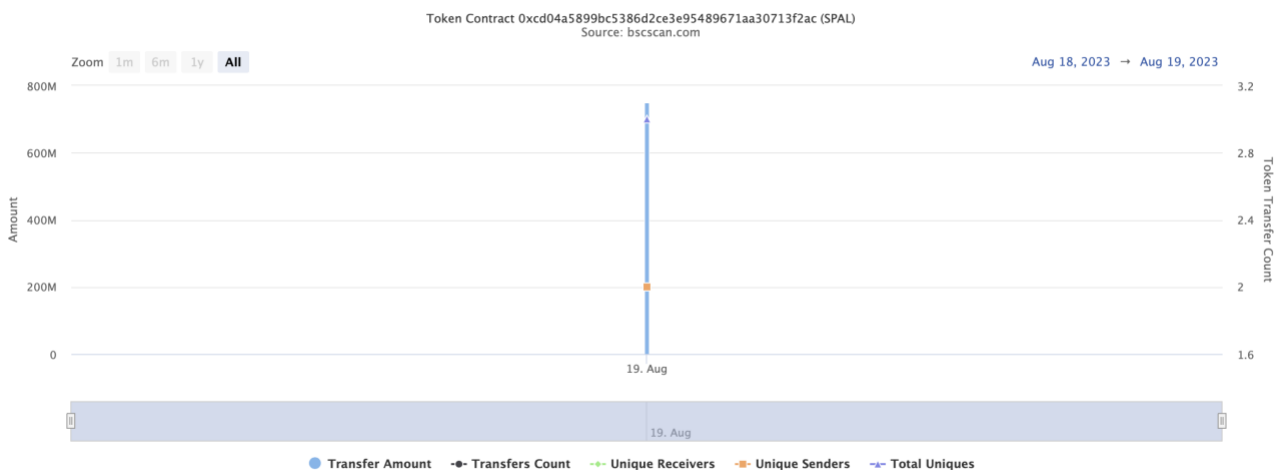
💡 Token Total Supply: 500,000,000.00 Token | Total Token Holders: 2

(A total of 500,000,000.00 tokens held by the top 100 accounts from the total supply of 500,000,000.00 token)

# Space Alpaca Contract Interaction Details

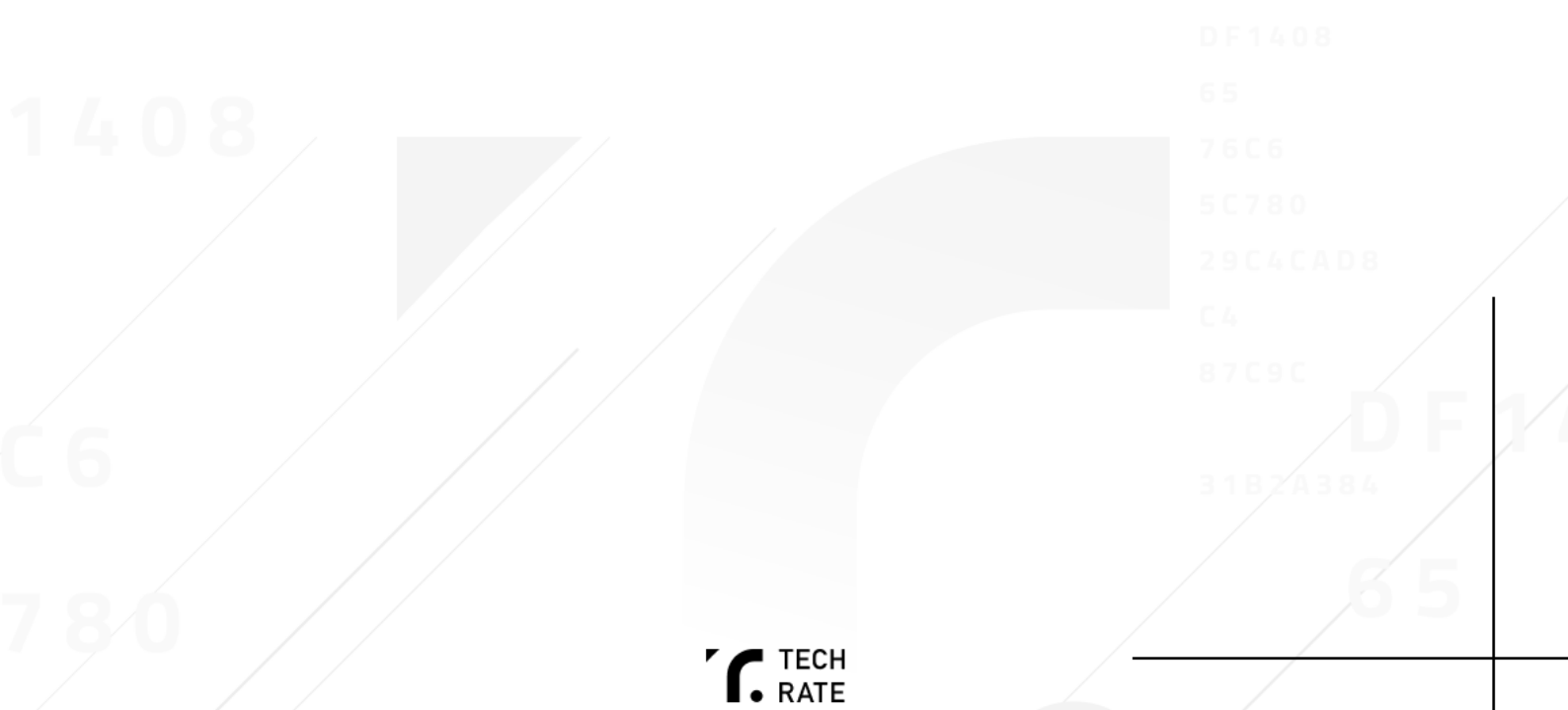
### Time Series: Token Contract Overview

Sat 19, Aug 2023 - Sat 19, Aug 2023



# Space Alpaca Top 10 Token Holders

Rank	Address	Quantity (Token)	Percentage
1	<a href="#">0xbd7b45...f86Fd5B0</a>	250,000,000	50.0000%
2	<a href="#">Null: 0x000...dEaD</a>	250,000,000	50.0000%



# Contract functions details

## + Context

- [Int] \_msgSender
- [Int] \_msgData

## + Ownable (Context)

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

## + [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

## + [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] IERC20

- [Ext] name
- [Ext] symbol
- [Ext] decimals
- [Ext] totalSupply
- [Ext] balanceOf
- [Ext] allowance
- [Ext] approve #
- [Ext] transfer #
- [Ext] transferFrom #

#### + [Int] IUniswapV2Factory

- [Ext] feeTo
- [Ext] feeToSetter
- [Ext] getPair
- [Ext] allPairs
- [Ext] allPairsLength

- [Ext] createPair #
  - [Ext] setFeeTo #
  - [Ext] setFeeToSetter #
- + [Int] IUniswapV2Router02 (IUniswapV2Router01)
- [Ext] removeLiquidityETHSupportingFeeOnTransferTokens #
  - [Ext] removeLiquidityETHWithPermitSupportingFeeOnTransferTokens #
  - [Ext] swapExactTokensForTokensSupportingFeeOnTransferTokens #
  - [Ext] swapExactETHForTokensSupportingFeeOnTransferTokens (\$)
  - [Ext] swapExactTokensForETHSupportingFeeOnTransferTokens #
- + SPAL (IERC20, Ownable)
- [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] isExcludedFromReward
  - [Pub] totalFees
  - [Pub] deliver #
  - [Pub] reflectionFromToken
  - [Pub] tokenFromReflection
  - [Pub] excludeFromReward #
    - modifiers: onlyOwner
  - [Ext] includeInReward #
    - modifiers: onlyOwner
  - [Pub] includedFromFee #

- modifiers: onlyOwner
- [Pub] excludedFromFee #
  - modifiers: onlyOwner
- [Ext] setAllFeePercent #
  - modifiers: onlyOwner
- [Pub] setSwapAndLiquifyEnabled #
  - modifiers: onlyOwner
- [Ext] setFeeWallet #
  - modifiers: onlyOwner
- [Ext] <Fallback> (\$)
- [Prv] \_reflectFee #
- [Prv] \_getValues
- [Prv] \_getTValues
- [Prv] \_getRValues
- [Prv] \_getRate
- [Prv] \_getCurrentSupply
- [Prv] \_takeLiquidity #
- [Prv] calculateTaxFee
- [Prv] calculateLiquidityFee
- [Prv] removeAllFee #
- [Prv] restoreAllFee #
- [Pub] isIncludedFromFee
- [Prv] \_approve #
- [Prv] \_transfer #
- [Pub] setNumTokensSellToAddToLiquidity #
  - modifiers: onlyOwner
- [Pub] getNumTokensSellToAddToLiquidity
- [Prv] swapAndLiquify #
  - modifiers: lockTheSwap
- [Prv] swapBNBForTokens #
- [Prv] swapTokensForBNB #
- [Prv] addLiquidity #
- [Prv] \_tokenTransfer #
- [Prv] \_transferStandard #

- [Prv] \_transferToExcluded #
- [Prv] \_transferFromExcluded #
- [Prv] \_transferBothExcluded #
- [Prv] \_tokenTransferNoFee #
- [Pub] recoverToken #
  - modifiers: onlyOwner
- [Pub] migrateLegacyToken #

(\$) = payable function

# = non-constant function

# Issues Checking Status

Issue description	Checking status
1. <b>Compiler errors.</b>	Passed
2. <b>Race conditions and Reentrancy. Cross-function race conditions.</b>	Passed
3. <b>Possible delays in data delivery.</b>	Passed
4. <b>Oracle calls.</b>	Passed
5. <b>Front running.</b>	Passed
6. <b>Timestamp dependence.</b>	Passed
7. <b>Integer Overflow and Underflow.</b>	Passed
8. <b>DoS with Revert.</b>	Passed
9. <b>DoS with block gas limit.</b>	Low issues
10. <b>Methods execution permissions.</b>	Passed
11. <b>Economy model of the contract.</b>	Passed
12. <b>The impact of the exchange rate on the logic.</b>	Passed
13. <b>Private user data leaks.</b>	Passed
14. <b>Malicious Event log.</b>	Passed
15. <b>Scoping and Declarations.</b>	Passed
16. <b>Uninitialized storage pointers.</b>	Passed
17. <b>Arithmetic accuracy.</b>	Passed
18. <b>Design Logic.</b>	Passed
19. <b>Cross-function race conditions.</b>	Passed
20. <b>Safe Open Zeppelin contracts implementation and usage.</b>	Passed
21. <b>Fallback function security.</b>	Passed

# Security Issues

## ✓ High Severity Issues

No high severity issues found.

## ✓ Medium Severity Issues

No medium severity issues found.

## ✓ Low Severity Issues

### 1. Out of gas

#### Issue:

- 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 addresses list.

#### Recommendation:

Check that the excluded array length is not too big.

### 2. Rounding error

#### Issue:

- At some calculation with division, it goes first. In Solidity we don't have floating points, but instead we get rounding errors.

#### Recommendation:

Do division after multiplication.

## Notes:





- `setFeeWallet()` function do not include old addresses back in fee taking.

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



- Owner can exclude from the fee and rewards.
- Owner can change fees.
- Owner can change \_marketingAddress and \_buybackAddress.
- Owner can change numTokensSellToAddToLiquidity.
- Owner can enable/disable swapAndLiquifyEnabled.
- Owner can withdraw ERC20 tokens except self tokens from the contract.

# Testnet deployment

Contracts Description Table

Contract	Type	Bases	Mutability	Modifiers
L	Function Name	Visibility		
SPAL	Implementation	IERC20, Ownable		
L	<a href="#">transfer</a>	Public !		NO !
L	<a href="#">approve</a>	Public !		NO !
L	<a href="#">transferFrom</a>	Public !		NO !
L	<a href="#">migrateLegacyToken</a>	Public !		NO !

## Legend

Symbol	Meaning
	Function can modify state
	Function is payable



# Conclusion

Smart contracts contain low severity issues! Liquidity pair contract's security is not checked due to out of scope. The further transfers and operations with the funds raise are not related to this particular contract.

Liquidity locking details are NOT provided by the team.

Security score: 83.

*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.*