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AUDIT COMPANY

Smart Contract Security Audit

TechRate

December, 2021

Audit Details

Audited project

AstroDonkey

Deployer address

0x86495411d5369a3398f11557453934d1bf33ffd8

Client contacts:

AstroDonkey team

Blockchain

Binance Smart Chain

Project website:

https://astrodonkey.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 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 AstroDonkey to perform an audit of smart contracts:

https://bscscan.com/address/0x32f3145A98A61813Af1ab0631A6a81850cEB8CaD#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

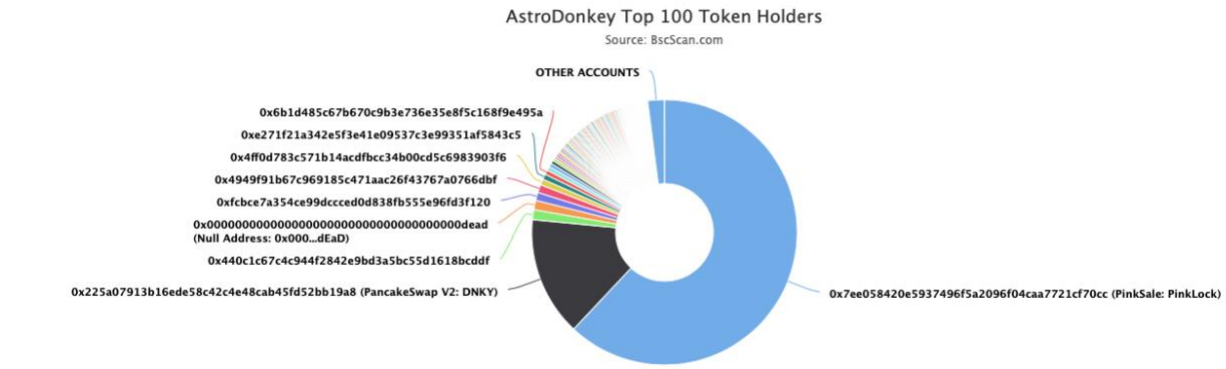
Token contract details for 21.12.2021

Contract name	AstroDonkey
Contract address	0x32f3145A98A61813Af1ab0631A6a81850cEB8CaD
Total supply	500,000,000,000
Token ticker	DNKY
Decimals	18
Token holders	464
Transactions count	3,475
Top 100 holders dominance	97.97%
Manager	0x86495411d5369a3398f11557453934d1bf33ffd8
Contract deployer address	0x86495411d5369a3398f11557453934d1bf33ffd8
Contract's current owner address	0x86495411d5369a3398f11557453934d1bf33ffd8

AstroDonkey Token Distribution

The top 100 holders collectively own 97.97% (489,860,615,649.36 Tokens) of AstroDonkey

Token Total Supply: 500,000,000,000.00 Token | Total Token Holders: 464

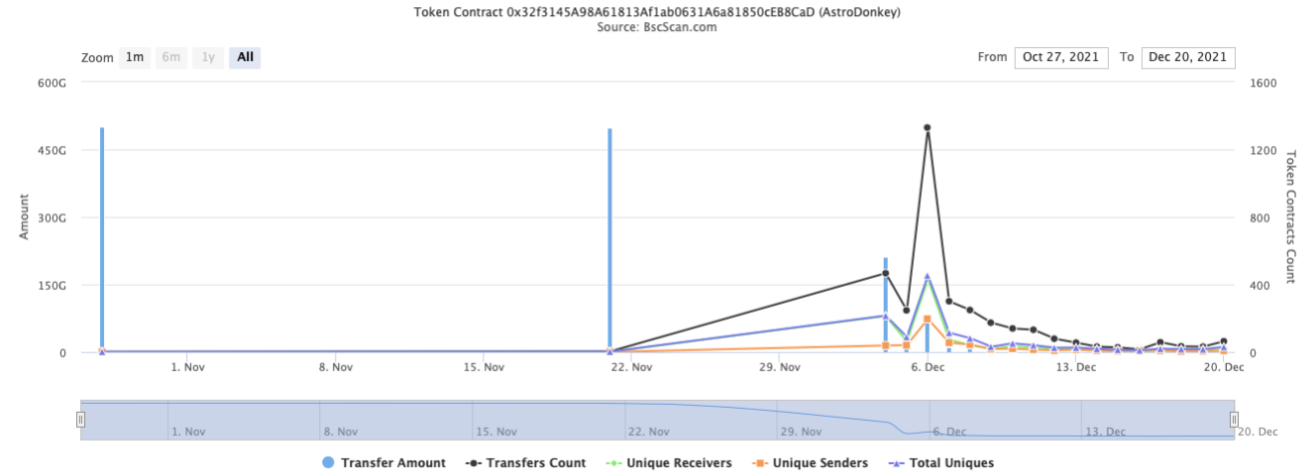


(A total of 489,860,615,649.36 tokens held by the top 100 accounts from the total supply of 500,000,000,000.00 token)

AstroDonkey Contract Interaction Details

Time Series: Token Contract Overview

Thu 28, Oct 2021 - Mon 20, Dec 2021



AstroDonkey Top 10 Token Holders

Rank	Address	Quantity (Token)	Percentage
1	PinkSale: PinkLock	310,000,000,000	62.0000%
2	PancakeSwap V2: DNKY	72,632,068,836.766312730082937239	14.5264%
3	0x440c1c67c4c944f2842e9bd3a5bc55d1618bcddf	6,070,547,972.992755692236901927	1.2141%
4	Null Address: 0x000...dEaD	5,737,284,038.201773836665292319	1.1475%
5	0xfcbce7a354ce99dccced0d838fb555e96fd3f120	4,978,764,616.467048137780313511	0.9958%
6	0x4949f91b67c969185c471aac26f43767a0766dbf	4,790,463,337.956141166669034126	0.9581%
7	0x4ff0d783c571b14acdfbcc34b00cd5c6983903f6	3,636,930,030.788266698291217809	0.7274%
8	0xe271f21a342e5f3e41e09537c3e99351af5843c5	3,299,770,036.007631356910005984	0.6600%
9	0x6b1d485c67b670c9b3e736e35e8f5c168f9e495a	2,731,476,122.508088195297407879	0.5463%
10	AstroDonkey: Deployer	2,475,000,000	0.4950%

Contract functions details

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

+ [Int] IERC20Metadata (IERC20)
  - [Ext] name
  - [Ext] symbol
  - [Ext] decimals

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

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

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

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

+ Manageable (Context)

```
  - [Pub] <Constructor> #
  - [Pub] manager
  - [Ext] transferManagement #
    - modifiers: onlyManager

+ [Int] IPancakeV2Factory
  - [Ext] createPair #

+ [Int] IPancakeV2Router
  - [Ext] factory
  - [Ext] WETH
  - [Ext] addLiquidityETH ($)
  - [Ext] swapExactTokensForETHSupportingFeeOnTransferTokens #

+ [Int] IPayable
  - [Ext] pay ($)
+  ServicePayer
  - [Pub] <Constructor> ($)
+  Fees
  - [Pub] <Constructor> #
+  Tokenomics (Fees)
  - [Pub] <Constructor> #
  - [Prv] _addFee #
  - [Prv] _addFees #
  - [Int] _getFeesCount
  - [Prv] _getFeeStruct
  - [Int] _getFee
  - [Int] _addFeeCollectedAmount #
  - [Int] getCollectedFeeTotal
+  Presaleable (Manageable)
  - [Ext] setPreseableEnabled #
    - modifiers: onlyManager
+  BaseRfiToken (IERC20, IERC20Metadata, Ownable, Presaleable, Tokenomics)
  - [Pub] <Constructor> #
  - [Ext] name
  - [Ext] symbol
  - [Ext] decimals
  - [Ext] totalSupply
  - [Pub] balanceOf
  - [Ext] transfer #
  - [Ext] allowance
  - [Ext] approve #
  - [Ext] transferFrom #
  - [Ext] burn #
  - [Int] _burnTokens #
  - [Pub] increaseAllowance #
  - [Pub] decreaseAllowance #
  - [Ext] isExcludedFromReward
  - [Ext] reflectionFromToken
  - [Int] tokenFromReflection
  - [Ext] excludeFromReward #
    - modifiers: onlyOwner
  - [Int] _exclude #
  - [Ext] includeInReward #
    - modifiers: onlyOwner
```

```
  - [Ext] setExcludedFromFee #
    - modifiers: onlyOwner
  - [Pub] isExcludedFromFee
  - [Int] _approve #
  - [Int] _isUnlimitedSender
  - [Int] _isUnlimitedRecipient
  - [Prv] _transfer #
  - [Prv] _transferTokens #
  - [Prv] _takeFees #
  - [Int] _getValues
  - [Int] _getCurrentRate
  - [Int] _getCurrentSupply
  - [Int] _beforeTokenTransfer #
  - [Int] _getSumOfFees
  - [Int] _isV2Pair
  - [Int] _redistribute #
  - [Int] _takeTransactionFees #
+ Liquifier (Ownable, Manageable)
  - [Ext] <Fallback> ($)
  - [Int] initializeLiquiditySwapper #
  - [Int] liquify #
  - [Prv] _setRouterAddress #
  - [Prv] _swapAndLiquify #
    - modifiers: lockTheSwap
  - [Prv] _swapTokensForEth #
  - [Prv] _addLiquidity #
  - [Ext] setRouterAddress #
    - modifiers: onlyManager
  - [Ext] setSwapAndLiquifyEnabled #
    - modifiers: onlyManager
  - [Ext] withdrawLockedEth #
    - modifiers: onlyManager
  - [Int] _approveDelegate #

+ Antiwhale (Tokenomics)
  - [Int] _getAntiwhaleFees

+ SafeSuper (BaseRfiToken, Liquifier, Antiwhale)
  - [Pub] <Constructor> #
  - [Int] _isV2Pair
  - [Int] _getSumOfFees
  - [Int] _beforeTokenTransfer #
  - [Int] _takeTransactionFees #
  - [Prv] _burn #
  - [Prv] _takeFee #
  - [Prv] _takeFeeToETH #
  - [Int] _approveDelegate #

+ SafeSuperV2 (SafeSuper, ServicePayer)
  - [Pub] <Constructor> ($)
    - modifiers: ServicePayer,Fees,Tokenomics,SafeSuper

($) = 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.	Passed
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

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.

```
function includeInReward(address account) external onlyOwner {
    require(_isExcludedFromRewards[account], "Account is not excluded");
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_excluded[i] == account) {
            _excluded[i] = _excluded[_excluded.length - 1];
            _balances[account] = 0;
            _isExcludedFromRewards[account] = false;
            _excluded.pop();
            break;
        }
    }
}
```

- 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.

```
function _getCurrentSupply() internal view returns (uint256, uint256) {
    uint256 rSupply = _reflectedSupply;
    uint256 tSupply = TOTAL_SUPPLY;

    /**
     * The code below removes balances of addresses excluded from rewards from
     * rSupply and tSupply, which effectively increases the % of transaction fees
     * delivered to non-excluded holders
     */
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (
            _reflectedBalances[_excluded[i]] > rSupply ||
            _balances[_excluded[i]] > tSupply
        ) return (_reflectedSupply, TOTAL_SUPPLY);
        rSupply = rSupply.sub(_reflectedBalances[_excluded[i]]);
        tSupply = tSupply.sub(_balances[_excluded[i]]);
    }
    if (tSupply == 0 || rSupply < _reflectedSupply.div(TOTAL_SUPPLY))
        return (_reflectedSupply, TOTAL_SUPPLY);
    return (rSupply, tSupply);
}
```

Recommendation:
Check that the excluded array length is not too big.

Notes:

- The function burnTokens() sends burn amount to burnAddress (not real burning).

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

- Owner can change the maximum transaction amount.
- Owner can exclude from the fee.
- Manager can transfer management to new address.
- Manager can change router.
- Manager can withdraw contract BNBs.
- Owner can lock and unlock. By the way, using these functions the owner could retake privileges even after the ownership was renounced.

Conclusion

Smart contracts contain low severity issues! Liquidity pair contract's security is not checked due to out of scope. Contract contains interfaces that is not audited.

Liquidity locking details are provided by the team:
https://bscscan.com/token/0xbb4cdb9cbd36b01bd1cbaebf2de08d9173bc095c?a=0x225A07913B16ede58c42C4e48CaB45fd52bb19A8#tokenAnalytics

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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.