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AUDIT COMPANY

Smart Contract Security Audit

TechRate

July, 2021

Audit Details

Audited project

Harbour

Deployer address

0x350E09143707730D483894da4912CA1180A037D3

Client contacts:

Harbour team

Blockchain

Binance Smart Chain

Project website:

https://harbourtoken.cc/

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 Harbour to perform an audit of smart contracts:

https://bscscan.com/address/0xa1eea1f30e2154c75cad56222481e23e36d16eb3#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

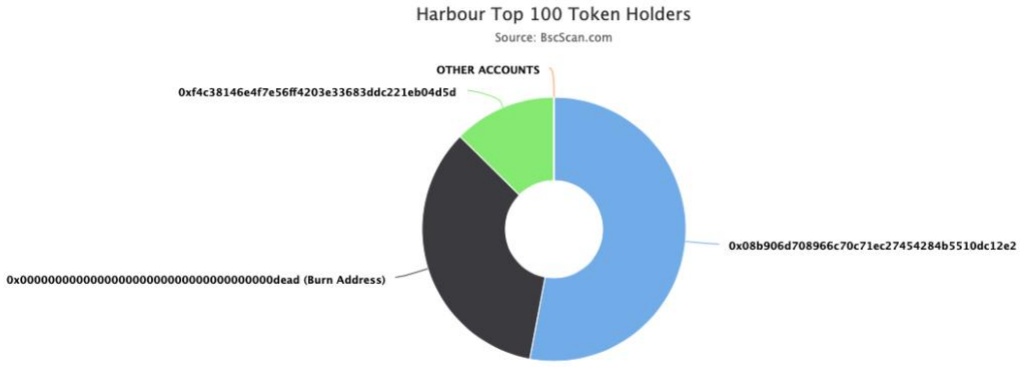
Token contract details for 10.07.2021

Contract name	Harbour
Contract address	0xa1EEA1f30E2154C75CAD56222481e23e36d16Eb3
Total supply	1,000,000,000,000,000
Token ticker	HARBOUR
Decimals	9
Token holders	3
Transactions count	4
Top 100 holders dominance	100.00%
Liquidity fee	10
Tax fee	0
Total fees	0
Pancake V2 pair	0x6bc7cd83e08f039c25eafa299dfc40f3d2e2888f
Contract deployer address	0x350E09143707730D483894da4912CA1180A037D3
Contract's current owner address	0x350e09143707730d483894da4912ca1180a037d3

Harbour Token Distribution

The top 100 holders collectively own 100.00% (1,000,000,000,000,000.00 Tokens) of Harbour

Token Total Supply: 1,000,000,000,000,000.00 Token | Total Token Holders: 3

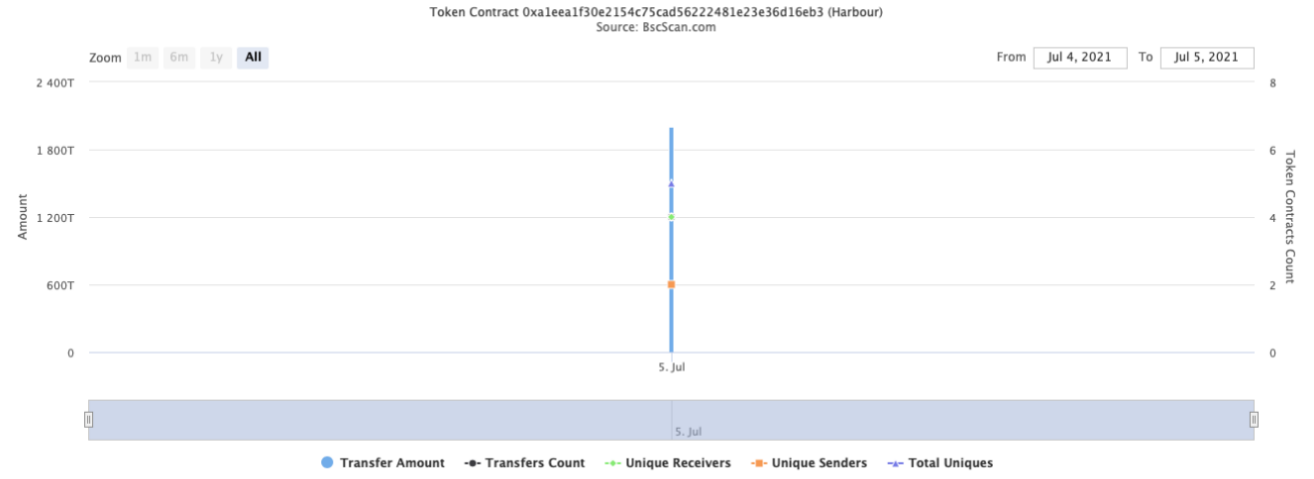


(A total of 1,000,000,000,000,000.00 tokens held by the top 100 accounts from the total supply of 1,000,000,000,000,000.00 token)

Harbour Contract Interaction Details

Time Series: Token Contract Overview

Mon 5, Jul 2021 - Mon 5, Jul 2021



Harbour Top 10 Token Holders

Rank	Address	Quantity (Token)	Percentage
1	0x08b906d708966c70c71ec27454284b5510dc12e2	529,536,000,000,001	52.9536%
2	Burn Address	344,463,999,999,999	34.4464%
3	0xf4c38146e4f7e56ff4203e33683ddc221eb04d5d	126,000,000,000,000	12.6000%

Contract functions details

+ [Int] IBEP20
  - [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

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

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

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

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

  - [Ext] setFeeToSetter #

+ [Int] IPancakePair
  - [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] IPancakeRouter01
  - [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] IPancakeRouter02 (IPancakeRouter01)
  - [Ext] removeLiquidityETHSupportingFeeOnTransferTokens #
  - [Ext] removeLiquidityETHWithPermitSupportingFeeOnTransferTokens #

- [Ext] swapExactTokensForTokensSupportingFeeOnTransferTokens #
- [Ext] swapExactETHForTokensSupportingFeeOnTransferTokens ($)
- [Ext] swapExactTokensForETHSupportingFeeOnTransferTokens #

+ ReentrancyGuard
- [Pub] <Constructor> #

+ HARBOUR (Context, IBEP20, Ownable, ReentrancyGuard)
- [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
- [Prv] _transferBothExcluded #
- [Pub] excludeFromFee #
  - modifiers: onlyOwner
- [Pub] includeInFee #
  - modifiers: onlyOwner
- [Ext] setTaxFeePercent #
  - modifiers: onlyOwner
- [Ext] setLiquidityFeePercent #
  - modifiers: onlyOwner
- [Ext] setMinTokenNumberToSell #
  - modifiers: onlyOwner
- [Ext] setMaxTokenNumberToSell #
  - modifiers: onlyOwner
- [Pub] setSwapAndLiquifyEnabled #
  - modifiers: onlyOwner
- [Ext] <Fallback> ($)
- [Prv] _reflectFee #
- [Prv] _getValues
- [Prv] _getValues
- [Prv] _getTValues
- [Prv] _getTValues
- [Prv] _getRValues
- [Prv] _getRate
- [Prv] _getCurrentSupply
- [Prv] _takeLiquidity #
- [Prv] calculateTaxFee

- [Prv] calculateLiquidityFee
- [Pub] getMultiplier
- [Pub] getDaysSinceInit
- [Prv] removeAllFee #
- [Prv] restoreAllFee #
- [Pub] isExcludedFromFee
- [Prv] _approve #
- [Prv] _transfer #
- [Prv] _tokenTransfer #
- [Prv] _transferStandard #
- [Prv] _transferToExcluded #
- [Prv] _transferFromExcluded #
- [Pub] setMaxTxPercent #
  - modifiers: onlyOwner
- [Pub] setExcludeFromMaxTx #
  - modifiers: onlyOwner
- [Pub] calculateBNBReward
- [Pub] getRewardCycleBlock
- [Pub] claimBNBReward #
  - modifiers: isHuman,nonReentrant
- [Prv] topUpClaimCycleAfterTransfer #
- [Prv] ensureMaxTxAmount
- [Pub] disruptiveTransfer ($)
- [Prv] swapAndLiquify #
- [Prv] distributeTaxes #
- [Prv] transferToAddressETH #
- [Pub] activateContract #
  - modifiers: onlyOwner
- [Pub] changerewardCycleBlock #
  - modifiers: onlyOwner
- [Pub] changeMarketingAddress #
  - modifiers: onlyOwner
- [Pub] changeExpensesAddress #
  - modifiers: onlyOwner
- [Pub] changeDevAddress #
  - modifiers: onlyOwner
- [Pub] reflectionfeestartstop #
  - modifiers: onlyOwner
- [Pub] migrateToken #
  - modifiers: onlyOwner
- [Pub] migrateBnb #
  - modifiers: onlyOwner
- [Pub] changethreshHoldTopUpRate #
  - modifiers: onlyOwner
- [Pub] _calculateBNBReward
- [Pub] _calculateTopUpClaim
- [Pub] _swapTokensForEth #
- [Pub] _swapETHForTokens #
- [Pub] _addLiquidity #

($) = 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(_isExcluded[account⬆], "Account is already excluded");
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_excluded[i] == account⬆) {
            _excluded[i] = _excluded[_excluded.length - 1];
            _tOwned[account⬆] = 0;
            _isExcluded[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() private view returns (uint256, uint256) {
    uint256 rSupply = _rTotal;
    uint256 tSupply = _tTotal;
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (
            _rOwned[_excluded[i]] > rSupply ||
            _tOwned[_excluded[i]] > tSupply
        ) return (_rTotal, _tTotal);
        rSupply = rSupply.sub(_rOwned[_excluded[i]]);
        tSupply = tSupply.sub(_tOwned[_excluded[i]]);
    }
    if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
    return (rSupply, tSupply);
}
```

Recommendation:

Check that the excluded array length is not too big

Notes:

- _addLiquidity function is unused.
- Liquidity distributed to rewards and between dev, expenses and marketing addresses.

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

- Owner can change the tax and liquidity fee.

```
function setTaxFeePercent(uint256 taxFee) external onlyOwner() {
    _taxFee = taxFee;
}

function setLiquidityFeePercent(uint256 liquidityFee) external onlyOwner() {
    _liquidityFee = liquidityFee;
}
```

- Owner can change the maximum transaction amount.

```
function setMaxTxPercent(uint256 maxTxPercent) public onlyOwner() {
    _maxTxAmount = _tTotal.mul(maxTxPercent).div(10000);
}
```

- Owner can exclude from the fee.

```
    function excludeFromFee(address account) public onlyOwner {
        _isExcludedFromFee[account] = true;
    }
```

- Owner can change minimum and maximum token number to send.

```
 function setMinTokenNumberToSell(uint256 amount) external onlyOwner() {
     minTokenNumberToSell = amount;
 }
function setMaxTokenNumberToSell(uint256 amount) external onlyOwner() {
    maxTokenNumberToSell = amount;
}
```

- Owner can exclude from max transaction restriction.

```
function setExcludeFromMaxTx(address _address, bool value)
    public
    onlyOwner
{
    _isExcludedFromMaxTx[_address] = value;
}
```

- Owner can change reward cycle block.

```
function changerewardCycleBlock(uint256 newcycle⬆) public onlyOwner {
    rewardCycleBlock = newcycle⬆;
}
```

- Owner can activate contract preset.

```
function activateContract() public onlyOwner {
    // reward claim
    disableEasyRewardFrom = block.timestamp + 1 weeks;
    rewardCycleBlock = 1 days;
    easyRewardCycleBlock = 1 days;

    // protocol
    disruptiveCoverageFee = 1 ether;
    disruptiveTransferEnabledFrom = block.timestamp;
    setMaxTxPercent(100);
    setSwapAndLiquifyEnabled(true);

    contractInitialization = now;

    // approve contract
    _approve(address(this), address(pancakeRouter), 2**256 - 1);
}
```

- Owner can change marketing expenses and dev addresses.

```
ftrace | funcSig
function changeMarketingAddress(address payable _newaddress⬆)
    public
    onlyOwner
{
    marketingAddress = _newaddress⬆;
}

ftrace | funcSig
function changeExpensesAddress(address payable _newaddress⬆)
    public
    onlyOwner
{
    expensesAddress = _newaddress⬆;
}

ftrace | funcSig
function changeDevAddress(address payable _newaddress⬆) public onlyOwner {
    devAddress = _newaddress⬆;
}
```

- Owner can disable reflection fee.

```
function reflectionfeestartstop(bool _value⬆) public onlyOwner {
    reflectionFeesdiabled = _value⬆;
}
```

- Owner can transfer contract token balance to another address.

```
function migrateToken(address _newadress⬆, uint256 _amount⬆)
    public
    onlyOwner
{
    removeAllFee();
    _transferStandard(address(this), _newadress⬆, _amount⬆);
    restoreAllFee();
}
```

- Owner can change threshHoldTopUpRate value.

```
function changethreshHoldTopUpRate(uint256 _newrate⬆) public onlyOwner {
    threshHoldTopUpRate = _newrate⬆;
}
```

- Owner can transfer contract BNB balance to another address.

```
function migrateBnb(address payable _newadd⬆, uint256 amount⬆)
    public
    onlyOwner
{
    (bool success, ) = address(_newadd⬆).call{value: amount⬆}("");
    require(
        success,
        "Address: unable to send value, charity may have reverted"
    );
}
```

- Owner can lock and unlock. By the way, using these functions the owner could retake privileges even after the ownership was renounced.

```
//Locks the contract for owner for the amount of time provided
function lock(uint256 time) public virtual onlyOwner {
    _previousOwner = _owner;
    _owner = address(0);
    _lockTime = now + time;
    emit OwnershipTransferred(_owner, address(0));
}

//Unlocks the contract for owner when _lockTime is exceeds
function unlock() public virtual {
    require(_previousOwner == msg.sender, "You don't have permission to unlock");
    require(now > _lockTime , "Contract is locked until 7 days");
    emit OwnershipTransferred(_owner, _previousOwner);
    _owner = _previousOwner;
}
```

Conclusion

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

Liquidity locking details provided by the team:
https://dxsale.app/app/v2_9/defipresale?saleID=388&chain=BSC

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.