Cyberscope

Audit Report

Pirates Plunder

December 2022

Type	BEP20
Network	BSC
Address	0xDF7C19f2a7E107aE6578293Bebbe3681cdfd0F42
Audited by	© cyberscope

Table of Contents

Contract Review

Contract Name	PIRATE
Compiler Version	v0.8.9+commit.e5eed63a
Optimization	200 runs
Licence	Unlicense
Explorer	https://bscscan.com/token/0xDF7C19f2a7E107aE6578293Bebbe3681cdfd0F42
Symbol	PIRATE
Decimals	18
Total Supply	777,777,777,777
Domain	piratesplunder.io

Source Files

Filename	**SHA256**
contract.sol	c3b0157ec8647aa78dc9d2728f60cf2c68ceb7610a221ea3371755c6c45b6dcb

Audit Updates

Initial Audit	6th December 2022
Corrected	

Contract Analysis

🔴 Critical 🟠 Medium ⚪ Minor / Informative 🔵 Pass

Severity	Code	Description	Status
🔴	ST	Stops Transactions	Unresolved
🔵	OCTD	Transfers Contract's Tokens	Passed
🔵	OTUT	Transfers User's Tokens	Passed
🔵	ELFM	Exceeds Fees Limit	Passed
🔵	ULTW	Transfers Liquidity to Team Wallet	Passed
🔵	MT	Mints Tokens	Passed
🔵	BT	Burns Tokens	Passed
🟠	BC	Blacklists Addresses	Unresolved

ST - Stops Transactions

Criticality	critical
Location	contract.sol#L1142,1173
Status	Unresolved

Description

Users can be taxed up to 100% or prevented from sale if they sell during the first day of their purchase.

```
if (!isBuy && enableEarlySellTax) {
    if (_holderFirstBuyTimestamp[from] != 0 && (_holderFirstBuyTimestamp[from]
+ (24 hours) >= block.timestamp))  {
        sellLiquidityFee = earlySellLiquidityFee;
        sellMarketingFee = earlySellMarketingFee;
        sellDevFee = earlySellDevFee;
        sellTotalFees = sellMarketingFee + sellLiquidityFee + sellDevFee;
    } else {
        sellLiquidityFee = 2;
        sellMarketingFee = 0;
        sellDevFee = 3;
        sellTotalFees = sellMarketingFee + sellLiquidityFee + sellDevFee;
    }
}
```

The contract owner can limit the transactions to one per block. Once disabled, it cannot be reenabled.

```
require(_holderLastTransferTimestamp[tx.origin] < block.number, "_transfer::
Transfer Delay enabled.  Only one purchase per block allowed.");
```

Recommendation

The contract should remove the last transfer check, as it may cause a transaction to fail. Additionally, the contract could embody a check for not allowing setting the early sell taxes more than the allowed limit of 25%.

The team should carefully manage the private keys of the owner's account. We strongly recommend a powerful security mechanism that will prevent a single user from accessing the contract admin functions. That risk can be prevented by temporarily locking the contract or renouncing ownership.

BC - Blacklists Addresses

Criticality	medium
Location	contract.sol#L1081
Status	Unresolved

Description

The contract owner has the authority to stop addresses from transactions. The owner may take advantage of it by calling the ManageBot function.

```
function ManageBot (address account, bool isBlacklisted) private onlyOwner {
    _blacklist[account] = isBlacklisted;
}
```

Recommendation

The team should carefully manage the private keys of the owner’s account. We strongly recommend a powerful security mechanism that will prevent a single user from accessing the contract admin functions. That risk can be prevented by temporarily locking the contract or renouncing ownership.

Contract Diagnostics

● Critical ● Medium ● Minor / Informative

Severity	Code	Description	Status
●	PTRP	Potential Transfer Revert Propagation	Unresolved
●	RSML	Redundant SafeMath Library	Unresolved
●	BLC	Business Logic Concern	Unresolved
●	L04	Conformance to Solidity Naming Conventions	Unresolved
●	L05	Unused State Variable	Unresolved
●	L07	Missing Events Arithmetic	Unresolved
●	L09	Dead Code Elimination	Unresolved
●	L13	Divide before Multiply Operation	Unresolved
●	L15	Local Scope Variable Shadowing	Unresolved

PTRP - Potential Transfer Revert Propagation

Criticality	minor / informative
Location	contract.sol#L1318,1325
Status	Unresolved

Description

The contract sends funds to a marketingWallet and a devWallet as part of the transfer flow. These addresses can either be a wallet address or a contract. If the address is a contract then it may revert from incoming payment. As a result, the error will propagate to the token's contract and revert the transfer.

```
(success,) = address(devWallet).call{value: ethForDev}("");
…
(success,) = address(marketingWallet).call{value: address(this).balance}("");
```

Recommendation

The contract should tolerate the potential revert from the underlying contracts when the interaction is part of the main transfer flow. This could be archived by not allowing set contract addresses or by sending the funds in a non-revertable way.

RSML - Redundant SafeMath Library

Criticality	minor / informative
Location	contract.sol#L459
Status	Unresolved

Description

The Solidity versions that are greater than or equal to 0.8.0 do not need the use of SafeMath Library. The usage of the SafeMath library produces unnecessary additional gas.

```
library SafeMath {
...
}
```

Recommendation

The team is advised to remove the SafeMath library as it is safe to do math operations without it.

ROA - Redundant Owner Approval

Criticality	minor / informative
Location	contract.sol#L1332
Status	Unresolved

Description

Approving the owner is redundant.

```
_approve(owner(), owner(), totalSupply());
```

Recommendation

The team is advised to remove this check, as there is no reason to approve the owner.

L04 - Conformance to Solidity Naming Conventions

Criticality	minor / informative
Location	contract.sol#L927,1065,1328,38,54,1081,37,929,1057,915,727
Status	Unresolved

Description

Solidity defines a naming convention that should be followed. Rule exceptions:

- Allow constant variable name/symbol/decimals to be lowercase.
- Allow _ at the beginning of the mixed_case match for private variables and unused parameters.

```
marketingWalletUpdated
_earlySellDevFee
_devFee
Send
PERMIT_TYPEHASH
MINIMUM_LIQUIDITY
_liquidityFee
ManageBot
_earlySellMarketingFee
...
```

Recommendation

Follow the Solidity naming convention.
https://docs.soliditylang.org/en/v0.8.17/style-guide.html#naming-conventions.

L05 - Unused State Variable

Criticality	minor / informative
Location	contract.sol#L658
Status	Unresolved

Description

There are segments that contain unused state variables.

```
MAX_INT256
```

Recommendation

Remove unused state variables.

L07 - Missing Events Arithmetic

Criticality	minor / informative
Location	contract.sol#L1031,1038,1057,1065,1043
Status	Unresolved

Description

Detected missing events for critical arithmetic parameters. There are functions that have no event emitted, so it is difficult to track off-chain changes.

```
swapTokensAtAmount = newAmount
maxTransactionAmount = newNum * (10 ** 18)
buyMarketingFee = _marketingFee
sellMarketingFee = _marketingFee
maxWallet = newNum * (10 ** 18)
```

Recommendation

Emit an event for critical parameter changes.

L09 - Dead Code Elimination

Criticality	minor / informative
Location	contract.sol#L704,717,1081,403,710
Status	Unresolved

Description

Functions that are not used in the contract, and make the code's size bigger.

```
abs
toInt256Safe
ManageBot
_burn
toUint256Safe
```

Recommendation

Remove unused functions.

L13 - Divide before Multiply Operation

Criticality	minor / informative
Location	contract.sol#L1114
Status	Unresolved

Description

Performing divisions before multiplications may cause lose of prediction.

```
fees = amount.mul(buyTotalFees).div(100)
tokensForMarketing += fees * sellMarketingFee / sellTotalFees
fees = amount.mul(sellTotalFees).div(100)
tokensForDev += fees * sellDevFee / sellTotalFees
```

Recommendation

The multiplications should be prior to the divisions.

L15 - Local Scope Variable Shadowing

Criticality	minor / informative
Location	contract.sol#L964
Status	Unresolved

Description

The are variables that are defined in the local scope containing the same name from an upper scope.

```
totalSupply
```

Recommendation

The local variables should have different names from the upper scoped variables.

Contract Functions

Contract	Type	Bases		
	Function Name	**Visibility**	**Mutability**	**Modifiers**
Context	Implementation			
	_msgSender	Internal		
	_msgData	Internal		
IUniswapV2Pair	Interface			
	name	External		-
	symbol	External		-
	decimals	External		-
	totalSupply	External		-
	balanceOf	External		-
	allowance	External		-
	approve	External	✓	-
	transfer	External	✓	-
	transferFrom	External	✓	-
	DOMAIN_SEPARATOR	External		-
	PERMIT_TYPEHASH	External		-
	nonces	External		-
	permit	External	✓	-
	MINIMUM_LIQUIDITY	External		-
	factory	External		-
	token0	External		-
	token1	External		-
	getReserves	External		-
	price0CumulativeLast	External		-
	price1CumulativeLast	External		-
	kLast	External		-
	mint	External	✓	-
	burn	External	✓	-

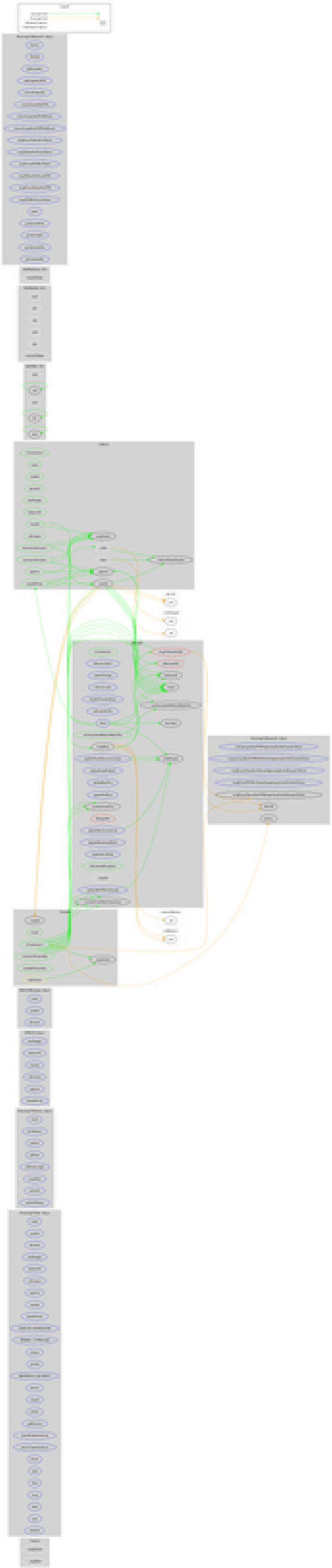
	swap	External	✓	-
	skim	External	✓	-
	sync	External	✓	-
	initialize	External	✓	-
IUniswapV2Factory	Interface			
	feeTo	External		-
	feeToSetter	External		-
	getPair	External		-
	allPairs	External		-
	allPairsLength	External		-
	createPair	External	✓	-
	setFeeTo	External	✓	-
	setFeeToSetter	External	✓	-
IERC20	Interface			
	totalSupply	External		-
	balanceOf	External		-
	transfer	External	✓	-
	allowance	External		-
	approve	External	✓	-
	transferFrom	External	✓	-
IERC20Metadata	Interface	IERC20		
	name	External		-
	symbol	External		-
	decimals	External		-
ERC20	Implementation	Context, IERC20, IERC20Metadata		
	<Constructor>	Public	✓	-
	name	Public		-
	symbol	Public		-

	decimals	Public		-
	totalSupply	Public		-
	balanceOf	Public		-
	transfer	Public	✓	-
	allowance	Public		-
	approve	Public	✓	-
	transferFrom	Public	✓	-
	increaseAllowance	Public	✓	-
	decreaseAllowance	Public	✓	-
	_transfer	Internal	✓	
	_mint	Internal	✓	
	_burn	Internal	✓	
	_approve	Internal	✓	
	_beforeTokenTransfer	Internal	✓	
SafeMath	Library			
	add	Internal		
	sub	Internal		
	sub	Internal		
	mul	Internal		
	div	Internal		
	div	Internal		
	mod	Internal		
	mod	Internal		
Ownable	Implementation	Context		
	<Constructor>	Public	✓	-
	owner	Public		-
	renounceOwnership	Public	✓	onlyOwner
	transferOwnership	Public	✓	onlyOwner
SafeMathInt	Library			
	mul	Internal		
	div	Internal		
	sub	Internal		

	add	Internal		
	abs	Internal		
	toUint256Safe	Internal		
SafeMathUint	Library			
	toInt256Safe	Internal		
IUniswapV2Router01	Interface			
	factory	External		-
	WETH	External		-
	addLiquidity	External	✓	-
	addLiquidityETH	External	Payable	-
	removeLiquidity	External	✓	-
	removeLiquidityETH	External	✓	-
	removeLiquidityWithPermit	External	✓	-
	removeLiquidityETHWithPermit	External	✓	-
	swapExactTokensForTokens	External	✓	-
	swapTokensForExactTokens	External	✓	-
	swapExactETHForTokens	External	Payable	-
	swapTokensForExactETH	External	✓	-
	swapExactTokensForETH	External	✓	-
	swapETHForExactTokens	External	Payable	-
	quote	External		-
	getAmountOut	External		-
	getAmountIn	External		-
	getAmountsOut	External		-
	getAmountsIn	External		-
IUniswapV2Router02	Interface	IUniswapV2Router01		
	removeLiquidityETHSupportingFeeOnTransferTokens	External	✓	-
	removeLiquidityETHWithPermitSupportingFeeOnTransferTokens	External	✓	-
	swapExactTokensForTokensSupportingFeeOnTransferTokens	External	✓	-

	swapExactETHForTokensSupportingFeeOnTransferTokens	External	Payable	-
	swapExactTokensForETHSupportingFeeOnTransferTokens	External	✓	-
PIRATE	Implementation	ERC20, Ownable		
	<Constructor>	Public	✓	ERC20
	<Receive Ether>	External	Payable	-
	enableTrading	External	✓	onlyOwner
	removeLimits	External	✓	onlyOwner
	disableTransferDelay	External	✓	onlyOwner
	setEarlySellTax	External	✓	onlyOwner
	updateSwapTokensAtAmount	External	✓	onlyOwner
	updateMaxTxnAmount	External	✓	onlyOwner
	updateMaxWalletAmount	External	✓	onlyOwner
	excludeFromMaxTransaction	Public	✓	onlyOwner
	updateSwapEnabled	External	✓	onlyOwner
	updateBuyFees	External	✓	onlyOwner
	updateSellFees	External	✓	onlyOwner
	excludeFromFees	Public	✓	onlyOwner
	ManageBot	Private	✓	onlyOwner
	setAutomatedMarketMakerPair	Public	✓	onlyOwner
	_setAutomatedMarketMakerPair	Private	✓	
	updateMarketingWallet	External	✓	onlyOwner
	updateDevWallet	External	✓	onlyOwner
	isExcludedFromFees	Public		-
	_transfer	Internal	✓	
	swapTokensForEth	Private	✓	
	addLiquidity	Private	✓	
	swapBack	Private	✓	
	Send	External	✓	onlyOwner

Contract Flow



Domain Info

Domain Name	piratesplunder.io
Registry Domain ID	4128c384f67c4f9e9273b489714e4ac1-DONUTS
Creation Date	2021-11-03T00:48:26Z
Updated Date	2022-12-05T19:20:34Z
Registry Expiry Date	2023-11-03T00:48:26Z
Registrar WHOIS Server	whois.namecheap.com
Registrar URL	https://www.namecheap.com/
Registrar	NameCheap, Inc.
Registrar IANA ID	1068

The domain was created about 1 year before the creation of the audit. It will expire in 11 months.

There is no public billing information, the creator is protected by the privacy settings.

Summary

There are some functions that can be abused by the owner like stopping transactions and blacklisting addresses. A multi-wallet signing pattern will provide security against potential hacks. Temporarily locking the contract or renouncing ownership will eliminate all the contract threats.

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Cyberscope is a blockchain cybersecurity company that was founded with the vision to make web3.0 a safer place for investors and developers. Since its launch, it has worked with thousands of projects and is estimated to have secured tens of millions of investors' funds.

Cyberscope is one of the leading smart contract audit firms in the crypto space and has built a high-profile network of clients and partners.

The Cyberscope team

https://www.cyberscope.io