Cyberscope

Audit Report

HARVEY PEKAR

November 2023

Network	ETH
Address	0x4e7334Fb46a371F025354F05c2a9F3DEC704bCb5
Audited by	© cyberscope

Analysis

Critical Medium Minor / Informative Pass

Severity	Code	Description	Status
●	ST	Stops Transactions	Passed
●	OTUT	Transfers User's Tokens	Passed
●	ELFM	Exceeds Fees Limit	Passed
●	MT	Mints Tokens	Passed
●	BT	Burns Tokens	Passed
●	BC	Blacklists Addresses	Passed

Diagnostics

● Critical ● Medium ● Minor / Informative

Severity	Code	Description	Status
●	MEE	Missing Events Emission	Unresolved
●	PVC	Price Volatility Concern	Unresolved
●	CO	Code Optimization	Unresolved
●	FSA	Fixed Swap Address	Unresolved
●	RRS	Redundant Require Statement	Unresolved
●	RSML	Redundant SafeMath Library	Unresolved
●	IDI	Immutable Declaration Improvement	Unresolved
●	L02	State Variables could be Declared Constant	Unresolved
●	L04	Conformance to Solidity Naming Conventions	Unresolved
●	L05	Unused State Variable	Unresolved
●	L07	Missing Events Arithmetic	Unresolved
●	L19	Stable Compiler Version	Unresolved
●	L20	Succeeded Transfer Check	Unresolved

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Review

Contract Name	PEKAR
Compiler Version	v0.8.19+commit.7dd6d404
Optimization	200 runs
Explorer	https://etherscan.io/address/0x4e7334fb46a371f025354f05c2a9f3dec704bcb5
Address	0x4e7334fb46a371f025354f05c2a9f3dec704bcb5
Network	ETH
Symbol	PEKAR
Decimals	18
Total Supply	699,999,999,999

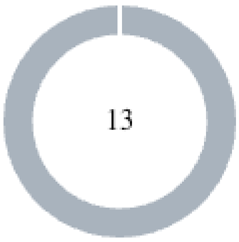
Audit Updates

Initial Audit	21 Nov 2023

Source Files

Filename	SHA256
PEKAR.sol	48eb44b11956a4bca322f7c45ef79c11e53a47db28b4e3aba91f35766908651e

Findings Breakdown



●	Critical	0
●	Medium	0
●	Minor / Informative	13

Severity	Unresolved	Acknowledged	Resolved	Other
Critical	0	0	0	0
Medium	0	0	0	0
Minor / Informative	13	0	0	0

MEE - Missing Events Emission

Criticality	Minor / Informative
Location	PEKAR.sol#L376,434,545
Status	Unresolved

Description

The contract performs actions and state mutations from external methods that do not result in the emission of events. Emitting events for significant actions is important as it allows external parties, such as wallets or dApps, to track and monitor the activity on the contract. Without these events, it may be difficult for external parties to accurately determine the current state of the contract.

```
uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(
  tokenAmount,
  0,
  path,
  address(this),
  block.timestamp
);
_rOwned[address(this)] = _rOwned[address(this)].add(rTeam);
_isExcludedFromFee[accounts[i]] = excluded;
```

Recommendation

It is recommended to include events in the code that are triggered each time a significant action is taking place within the contract. These events should include relevant details such as the user's address and the nature of the action taken. By doing so, the contract will be more transparent and easily auditable by external parties. It will also help prevent potential issues or disputes that may arise in the future.

PVC - Price Volatility Concern

Criticality	Minor / Informative
Location	PEKAR.sol#L458
Status	Unresolved

Description

The contract accumulates tokens from the taxes to swap them for ETH. The variable `swapTokensAtAmount` sets a threshold where the contract will trigger the swap functionality. If the variable is set to a big number, then the contract will swap a huge amount of tokens for ETH.

It is important to note that the price of the token representing it, can be highly volatile. This means that the value of a price volatility swap involving Ether could fluctuate significantly at the triggered point, potentially leading to significant price volatility for the parties involved.

```
function setSwapTokensAtAmount(uint256 _amount) external onlyOwner {
    require (_amount >= _tTotal / 1000000, "shouldn't be less than
0,0001%");
    _swapTokensAtAmount = _amount;
}
```

Recommendation

The contract could ensure that it will not sell more than a reasonable amount of tokens in a single transaction. A suggested implementation could check that the maximum amount should be less than a fixed percentage of the exchange reserves. Hence, the contract will guarantee that it cannot accumulate a huge amount of tokens in order to sell them.

CO - Code Optimization

Criticality	Minor / Informative
Location	PEKAR.sol#L206
Status	Unresolved

Description

There are code segments that could be optimized. A segment may be optimized so that it becomes a smaller size, consumes less memory, executes more rapidly, or performs fewer operations.

The contract declares a struct named `Distribution` that contains only one property (`marketing`). This struct introduces unnecessary complexity, and declaring a struct for a single variable is redundant.

```
struct Distribution {
    uint256 marketing;
}

Distribution public distribution;
```

Recommendation

The team is advised to take these segments into consideration and rewrite them so the runtime will be more performant. That way it will improve the efficiency and performance of the source code and reduce the cost of executing it.

FSA - Fixed Swap Address

Criticality	Minor / Informative
Location	PEKAR.sol#L223,224
Status	Unresolved

Description

The swap address is assigned once and it can not be changed. It is a common practice in decentralized exchanges to create new swap versions. A contract that cannot change the swap address may not be able to catch up to the upgrade. As a result, the contract will not be able to migrate to a new liquidity pool pair or decentralized exchange.

```
IUniswapV2Router02 _uniswapV2Router =
IUniswapV2Router02(0x7a250d5630B4cF539739dF2C5dAcb4c659F2488D);
uniswapV2Router = _uniswapV2Router;
uniswapV2Pair = IUniswapV2Factory(_uniswapV2Router.factory())
    .createPair(address(this), _uniswapV2Router.WETH());
```

Recommendation

The team is advised to add the ability to change the pair and router address in order to cover potential liquidity pool migrations. It would be better to support multiple pair addresses so the token will be able to have the same behavior in all the decentralized liquidity pairs.

RRS - Redundant Require Statement

Criticality	Minor / Informative
Location	PEKAR.sol#L87
Status	Unresolved

Description

The contract utilizes a `require` statement within the `add` function aiming to prevent overflow errors. This function is designed based on the SafeMath library's principles. In Solidity version 0.8.0 and later, arithmetic operations revert on overflow and underflow, making the overflow check within the function redundant. This redundancy could lead to extra gas costs and increased complexity without providing additional security.

```
function add(uint256 a, uint256 b) internal pure returns (uint256) {
    uint256 c = a + b;
    require(c >= a, "SafeMath: addition overflow");
    return c;
}
```

Recommendation

It is recommended to remove the `require` statement from the add function since the contract is using a Solidity pragma version equal to or greater than 0.8.0. By doing so, the contract will leverage the built-in overflow and underflow checks provided by the Solidity language itself, simplifying the code and reducing gas consumption. This change will uphold the contract's integrity in handling arithmetic operations while optimizing for efficiency and cost-effectiveness.

RSML - Redundant SafeMath Library

Criticality	Minor / Informative
Location	PEKAR.sol
Status	Unresolved

Description

SafeMath is a popular Solidity library that provides a set of functions for performing common arithmetic operations in a way that is resistant to integer overflows and underflows.

Starting with Solidity versions that are greater than or equal to 0.8.0, the arithmetic operations revert to underflow and overflow. As a result, the native functionality of the Solidity operations replaces the SafeMath library. Hence, the usage of the SafeMath library adds complexity, overhead and increases gas consumption unnecessarily.

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

Recommendation

The team is advised to remove the SafeMath library. Since the version of the contract is greater than `0.8.0` then the pure Solidity arithmetic operations produce the same result.

If the previous functionality is required, then the contract could exploit the `unchecked { ... }` statement.

Read more about the breaking change on https://docs.soliditylang.org/en/v0.8.16/080-breaking-changes.html#solidity-v0-8-0-breaking-changes.

IDI - Immutable Declaration Improvement

Criticality	Minor / Informative
Location	PEKAR.sol#L223,224,231
Status	Unresolved

Description

The contract declares state variables that their value is initialized once in the constructor and are not modified afterwards. The `immutable` is a special declaration for this kind of state variables that saves gas when it is defined.

```
uniswapV2Router
uniswapV2Pair
distribution
```

Recommendation

By declaring a variable as immutable, the Solidity compiler is able to make certain optimizations. This can reduce the amount of storage and computation required by the contract, and make it more gas-efficient.

L02 - State Variables could be Declared Constant

Criticality	Minor / Informative
Location	PEKAR.sol#L183,184,185,186,196,202
Status	Unresolved

Description

State variables can be declared as constant using the constant keyword. This means that the value of the state variable cannot be changed after it has been set. Additionally, the constant variables decrease gas consumption of the corresponding transaction.

```
uint256 private _redisFeeOnBuy = 0
uint256 private _taxFeeOnBuy = 2
uint256 private _redisFeeOnSell = 0
uint256 private _taxFeeOnSell = 3
address private marketingAddress =
0xC824f55F79DC80d84b4552023D919D4444444444
bool private swapEnabled = true
```

Recommendation

Constant state variables can be useful when the contract wants to ensure that the value of a state variable cannot be changed by any function in the contract. This can be useful for storing values that are important to the contract's behavior, such as the contract's address or the maximum number of times a certain function can be called. The team is advised to add the constant keyword to state variables that never change.

L04 - Conformance to Solidity Naming Conventions

Criticality	Minor / Informative
Location	PEKAR.sol#L148,171,172,173,180,204,408,453,458
Status	Unresolved

Description

The Solidity style guide is a set of guidelines for writing clean and consistent Solidity code. Adhering to a style guide can help improve the readability and maintainability of the Solidity code, making it easier for others to understand and work with.

The followings are a few key points from the Solidity style guide:

1. Use camelCase for function and variable names, with the first letter in lowercase (e.g., myVariable, updateCounter).
2. Use PascalCase for contract, struct, and enum names, with the first letter in uppercase (e.g., MyContract, UserStruct, ErrorEnum).
3. Use uppercase for constant variables and enums (e.g., MAX_VALUE, ERROR_CODE).
4. Use indentation to improve readability and structure.
5. Use spaces between operators and after commas.
6. Use comments to explain the purpose and behavior of the code.
7. Keep lines short (around 120 characters) to improve readability.

```
function WETH() external pure returns (address);
string private constant _name = "HARVEY PEKAR"
string private constant _symbol = "PEKAR"
uint8 private constant _decimals = 18
uint256 private constant _tTotal = 699_999_999_999 * 10**_decimals
uint256 public _swapTokensAtAmount = 9_999_999_999 * 10**_decimals

function Manualswapandsend() external onlyOwner {
        uint256 contractBalance = balanceOf(address(this));
        swapTokensForEth(contractBalance);
        uint256 contractETHBalance = address(this).balance;
        sendETHToFee(contractETHBalance);
    }
address _tokenContract
uint256 _amount
```

Recommendation

By following the Solidity naming convention guidelines, the codebase increased the readability, maintainability, and makes it easier to work with.
Find more information on the Solidity documentation
https://docs.soliditylang.org/en/v0.8.17/style-guide.html#naming-convention.

L05 - Unused State Variable

Criticality	Minor / Informative
Location	PEKAR.sol#L176,195
Status	Unresolved

Description

An unused state variable is a state variable that is declared in the contract, but is never used in any of the contract's functions. This can happen if the state variable was originally intended to be used, but was later removed or never used.

Unused state variables can create clutter in the contract and make it more difficult to understand and maintain. They can also increase the size of the contract and the cost of deploying and interacting with it.

```
mapping(address => uint256) private _tOwned
mapping (address => uint256) private _buyMap
```

Recommendation

To avoid creating unused state variables, it's important to carefully consider the state variables that are needed for the contract's functionality, and to remove any that are no longer needed. This can help improve the clarity and efficiency of the contract.

L07 - Missing Events Arithmetic

Criticality	Minor / Informative
Location	PEKAR.sol#L460
Status	Unresolved

Description

Events are a way to record and log information about changes or actions that occur within a contract. They are often used to notify external parties or clients about events that have occurred within the contract, such as the transfer of tokens or the completion of a task.

It's important to carefully design and implement the events in a contract, and to ensure that all required events are included. It's also a good idea to test the contract to ensure that all events are being properly triggered and logged.

```
_swapTokensAtAmount = _amount
```

Recommendation

By including all required events in the contract and thoroughly testing the contract's functionality, the contract ensures that it performs as intended and does not have any missing events that could cause issues with its arithmetic.

L19 - Stable Compiler Version

Criticality	Minor / Informative
Location	PEKAR.sol#L22
Status	Unresolved

Description

The `^` symbol indicates that any version of Solidity that is compatible with the specified version (i.e., any version that is a higher minor or patch version) can be used to compile the contract. The version lock is a mechanism that allows the author to specify a minimum version of the Solidity compiler that must be used to compile the contract code. This is useful because it ensures that the contract will be compiled using a version of the compiler that is known to be compatible with the code.

```
pragma solidity ^0.8.16;
```

Recommendation

The team is advised to lock the pragma to ensure the stability of the codebase. The locked pragma version ensures that the contract will not be deployed with an unexpected version. An unexpected version may produce vulnerabilities and undiscovered bugs. The compiler should be configured to the lowest version that provides all the required functionality for the codebase. As a result, the project will be compiled in a well-tested LTS (Long Term Support) environment.

L20 - Succeeded Transfer Check

Criticality	Minor / Informative
Location	PEKAR.sol#L455
Status	Unresolved

Description

According to the ERC20 specification, the transfer methods should be checked if the result is successful. Otherwise, the contract may wrongly assume that the transfer has been established.

```
tokenContract.transfer(msg.sender, _amount)
```

Recommendation

The contract should check if the result of the transfer methods is successful. The team is advised to check the SafeERC20 library from the Openzeppelin library.

Functions Analysis

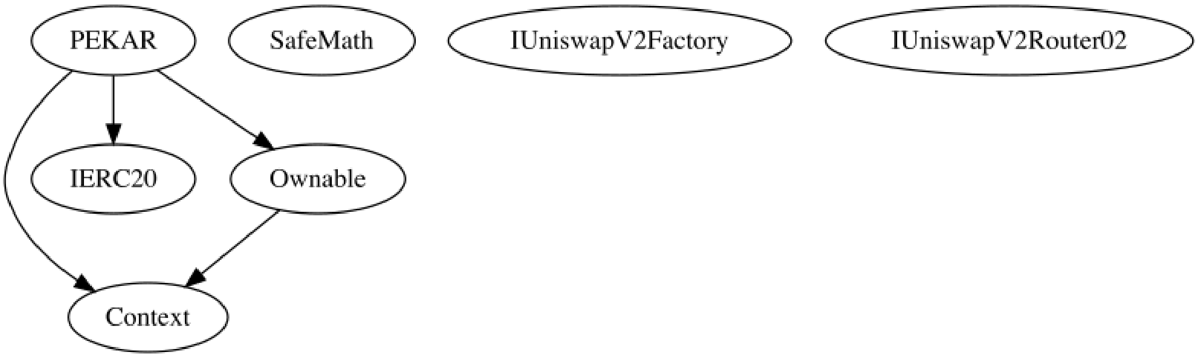
Contract	Type	Bases		
	Function Name	**Visibility**	**Mutability**	**Modifiers**
Context	Implementation			
	_msgSender	Internal		
IERC20	Interface			
	totalSupply	External		-
	balanceOf	External		-
	transfer	External	✓	-
	allowance	External		-
	approve	External	✓	-
	transferFrom	External	✓	-
Ownable	Implementation	Context		
		Public	✓	-
	owner	Public		-
	transferOwnership	Public	✓	onlyOwner
SafeMath	Library			
	add	Internal		

	sub	Internal		
	sub	Internal		
	mul	Internal		
	div	Internal		
	div	Internal		
IUniswapV2Factory	Interface			
	createPair	External	✓	-
IUniswapV2Router02	Interface			
	swapExactTokensForETHSupportingFeeOnTransferTokens	External	✓	-
	factory	External		-
	WETH	External		-
	addLiquidityETH	External	Payable	-
PEKAR	Implementation	Context, IERC20, Ownable		
		Public	✓	-
	name	Public		-
	symbol	Public		-
	decimals	Public		-
	totalSupply	Public		-
	balanceOf	Public		-

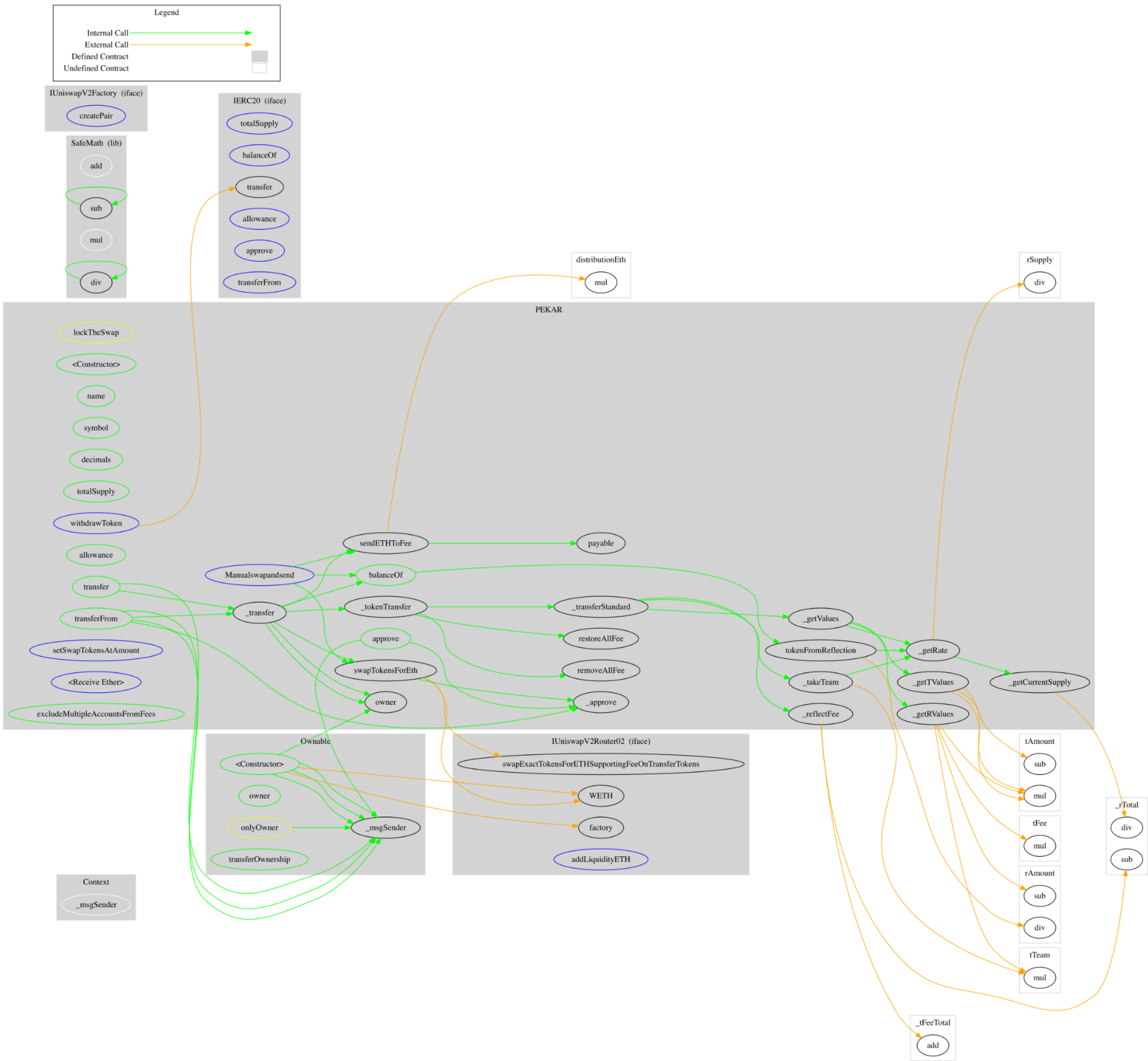
	transfer	Public	✓	-
	allowance	Public		-
	approve	Public	✓	-
	transferFrom	Public	✓	-
	tokenFromReflection	Private		
	removeAllFee	Private	✓	
	restoreAllFee	Private	✓	
	_approve	Private	✓	
	_transfer	Private	✓	
	swapTokensForEth	Private	✓	lockTheSwap
	sendETHToFee	Private	✓	lockTheSwap
	Manualswapandsend	External	✓	onlyOwner
	_tokenTransfer	Private	✓	
	_transferStandard	Private	✓	
	_takeTeam	Private	✓	
	withdrawToken	External	✓	onlyOwner
	setSwapTokensAtAmount	External	✓	onlyOwner
	_reflectFee	Private	✓	
		External	Payable	-
	_getValues	Private		
	_getTValues	Private		
	_getRValues	Private		
	_getRate	Private		

	_getCurrentSupply	Private		
	excludeMultipleAccountsFromFees	Public	✓	onlyOwner

Inheritance Graph



Flow Graph


Legend
Internal Call
External Call
Defined Contract
Undefined Contract
IUniswapV2Factory (iface)
createPair
SafeMath (lib)
add
sub
mul
div
IERC20 (iface)
totalSupply
balanceOf
transfer
allowance
approve
transferFrom
distributionEth
mul
rSupply
div
PEKAR
lockTheSwap
<Constructor>
name
symbol
decimals
totalSupply
withdrawToken
allowance
transfer
transferFrom
setSwapTokensAtAmount
<Receive Ether>
excludeMultipleAccountsFromFees
sendETHToFee
payable
Manualswapandsend
balanceOf
_transfer
_tokenTransfer
_transferStandard
restoreAllFee
removeAllFee
approve
swapTokensForEth
owner
_approve
_getValues
tokenFromReflection
_takeTeam
_reflectFee
_getRate
_getTValues
_getRValues
_getCurrentSupply
Ownable
<Constructor>
owner
onlyOwner
transferOwnership
_msgSender
IUniswapV2Router02 (iface)
swapExactTokensForETHSupportingFeeOnTransferTokens
WETH
factory
addLiquidityETH
Context
_msgSender
tAmount
sub
mul
tFee
mul
rAmount
sub
div
tTeam
mul
_rTotal
div
sub
_tFeeTotal
add

Summary

HARVEY PEKAR contract implements a token mechanism. This audit investigates security issues, business logic concerns and potential improvements. HARVEY PEKAR is an interesting project that has a friendly and growing community. The Smart Contract analysis reported no compiler error or critical issues. The contract Owner can access some admin functions that can not be used in a malicious way to disturb the users' transactions. The fees are locked at 2% for buys and 3% for sales.

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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

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