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Contract Checker



**SMART CONTRACT SECURITY AUDIT OF:
(AHL) Arab Hyper Loop**



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SUMMARY

CONTRACTCHECKER received an application for smart contract security audit of Arab Hyper Loop Token on March 7 , 2023, from the project team to discover if any vulnerability in the source code of the AHL project as well as any contract dependencies. Standard tests have been performed, using Static Analysis and Manual Review techniques as per project team requirement.

The auditing process focuses to the following considerations with collaboration of an expert team

- Functionality test of the Smart Contract to determine if proper logic has been followed throughout the whole process.
- Manually detailed examination of the code line by line by experts.
- Live test by multiple clients using Testnet.
- Analysing failure preparations to check how the Smart Contract performs in case of any bugs and vulnerabilities.
- Checking whether all the libraries used in the code are on the latest version.
- Analysing the security of the on-chain data.

Project Summary

Project Name:	Arab Hyper Loop (AHL)
Web Site	https://www.etihadrail.org
Platform:	Binance Smart Chain
Token Type:	BEP20
Language:	Solidity
Platforms & Tools:	Remix IDE, Truffle, Truffle Team, Ganache, Solhint, VScode, Mythril, Contract Library
Contract address:	0x308CcbE9C7f4e713BF1BE35d53611da19234c91d
Link Address:	https://explorer.bitquery.io/bsc/token/0x308ccbe9c7f4e713bf1be35d53611da19234c91d



Audit Result Summary

- ✓ AHL Token has **PASSED** the smart contract audit successfully
(Other unknown security vulnerabilities are not included in the audit responsibility scope)

Audit Result:	Passed
Ownership:	Renounced
KYC Verification:	KYC done with Blocksafu
Audit Date:	March 08, 2023
Audit Team:	CONTRACTCHECKER

Privileges of Ownership

If a privilege has high risk, it will be written in **RED**, in this case there are no risk.

~~Owner can enable trade but can't disable~~ Usually for Private Sale / Public Sale

~~Owner can transfer ownership to a new account~~

~~Owner can enable or disable the swap and liquify~~ Disabling will not make distribution to Marketing etc.

~~Owner can exclude / include from fees~~

~~Owner can exclude / include from reward~~

~~Owner can exclude / include from anti-whale~~

~~Owner can change maximum transfer amount rate for anti-whale system~~

~~Owner can change marketing and/or charity wallet address~~

~~Owner can change the min amount of token needed top swap and liquify~~

~~Owner can modify fee percentages (total limit is 20)~~

~~Owner can include any wallet to whitelist~~



OVERVIEW

This Audit Report mainly focuses on overall security of [AHL] Smart Contract. Contractchecker team scanned the contract and assessed overall system architecture and the smart contract codebase against vulnerabilities, exploits, hacks, and back-doors to ensure its reliability and correctness.

Auditing Approach and Applied Methodologies

Coinchecker team has performed rigorous test procedures of the project

- Code design patterns analysis in which smart contract architecture is reviewed to ensure it is structured according to industry standards and safe use of third-party smart contracts and libraries.
- Line-by-line inspection of the Smart Contract to find any potential vulnerability like race conditions, transaction-ordering dependence, timestamp dependence, and denial of service attacks.
- Unit testing Phase, we coded/conducted custom unit tests written for each function in the contract to verify that each function works as expected.
- Automated Test performed with our in-house developed tools to identify vulnerabilities and security flaws of the Smart Contract.

The focus of the audit was to verify that the Smart Contract System is secure, resilient and working according to the specifications. The audit activities can be grouped in the following three categories:

Security

Identifying security related issues within each contract and the system of contract.

Sound Architecture

Evaluation of the architecture of this system through the lens of established smart contract best practices and general software best practices.

Code Correctness and Quality

A full review of the contract source code. The primary areas of focus include:

- Accuracy
- Readability
- Sections of code with high complexity
- Quantity and quality of test coverage



Risk Classification

Vulnerabilities are classified in 3 main levels as below based on possible effect to the contract.

High level vulnerability

Vulnerabilities on this level must be fixed immediately as they might lead to fund and data loss and open to manipulation.

Medium level vulnerability

Vulnerabilities on this level also important to fix as they have potential risk of future exploit and manipulation.

Low level vulnerability

Vulnerabilities on this level are minor and may not affect the smart contract execution.

Vulnerability Checklist

Nº	Description.	Result
1	Compiler warnings.	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.	Passed
10	Methods execution permissions.	Passed
11	Economy model.	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 Zeppelin module.	Passed
21	Fallback function security.	Passed



Manual Audit:

For this section the code was tested/read line by line by our developers. Additionally, Remix IDE's JavaScript VM and Kovan networks used to test the contract functionality.

Smart Contract SWC Attack Test

SWC attack test is not in scope of standard audit process

Automated Audit

Remix Compiler Warnings

It throws warnings by Solidity's compiler. No issues found.



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.

