



Cyberscope

# Audit Report

## **Autonomi**

March 2025

Repository <https://github.com/lajosdeme/autonomi-claims>

Files [FoundationEmissions.sol](#)

Commit [b69a9ccc6a485eabec696eadd7e4c884066a04b5](#)

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# Table of Contents

<b>Table of Contents</b>	<b>1</b>
<b>Risk Classification</b>	<b>2</b>
<b>Review</b>	<b>3</b>
Audit Updates	3
Source Files	3
<b>Overview</b>	<b>4</b>
FoundationEmissions Contract	4
Claiming Mechanism	4
Token Emissions Calculation	4
Security Measures	4
Roles	5
Foundation	5
Retrieval Functions	5
<b>Findings Breakdown</b>	<b>6</b>
<b>Diagnostics</b>	<b>7</b>
AAC - Allocation Amount Clarification	8
Description	8
Recommendation	8
Team Update	8
CCR - Contract Centralization Risk	9
Description	9
Recommendation	9
PAI - Potential Allocation Inconsistency	10
Description	10
Recommendation	10
Team Update	10
UTPD - Unverified Third Party Dependencies	11
Description	11
Recommendation	11
Team Update	11
L04 - Conformance to Solidity Naming Conventions	12
Description	12
Recommendation	12
<b>Functions Analysis</b>	<b>13</b>
<b>Inheritance Graph</b>	<b>14</b>
<b>Flow Graph</b>	<b>15</b>
<b>Summary</b>	<b>16</b>
<b>Disclaimer</b>	<b>17</b>
<b>About Cyberscope</b>	<b>18</b>

# Risk Classification

The criticality of findings in Cyberscope's smart contract audits is determined by evaluating multiple variables. The two primary variables are:

1. **Likelihood of Exploitation:** This considers how easily an attack can be executed, including the economic feasibility for an attacker.
2. **Impact of Exploitation:** This assesses the potential consequences of an attack, particularly in terms of the loss of funds or disruption to the contract's functionality.

Based on these variables, findings are categorized into the following severity levels:

1. **Critical:** Indicates a vulnerability that is both highly likely to be exploited and can result in significant fund loss or severe disruption. Immediate action is required to address these issues.
2. **Medium:** Refers to vulnerabilities that are either less likely to be exploited or would have a moderate impact if exploited. These issues should be addressed in due course to ensure overall contract security.
3. **Minor:** Involves vulnerabilities that are unlikely to be exploited and would have a minor impact. These findings should still be considered for resolution to maintain best practices in security.
4. **Informative:** Points out potential improvements or informational notes that do not pose an immediate risk. Addressing these can enhance the overall quality and robustness of the contract.

Severity	Likelihood / Impact of Exploitation
● Critical	Highly Likely / High Impact
● Medium	Less Likely / High Impact or Highly Likely/ Lower Impact
● Minor / Informative	Unlikely / Low to no Impact

## Review

Repository	<a href="https://github.com/lajosdeme/autonomi-claims">https://github.com/lajosdeme/autonomi-claims</a>
Commit	b69a9ccc6a485eabec696eadd7e4c884066a04b5

## Audit Updates

Initial Audit	04 Mar 2025  <a href="https://github.com/cyberscope-io/audits/blob/main/5-ant/v1/emissions.pdf">https://github.com/cyberscope-io/audits/blob/main/5-ant/v1/emissions.pdf</a>
Corrected Phase 2	13 Mar 2025

## Source Files

Filename	SHA256
FoundationEmissions.sol	df99d8c5e2dde56eedf21f27739adc963fbed7f0e66e57ffed12f5e07bc6e5bd

# Overview

## FoundationEmissions Contract

The `FoundationEmissions` contract manages the release of a specific allocation of ANT tokens for the foundation according to a structured emissions schedule. The contract defines a 50-year release period with token distribution percentages that vary each year, starting from 20% in the first year and gradually decreasing over time. The total token allocation for the foundation is 292,699,223 tokens, and the release of tokens is based on a fixed yearly vesting schedule.

## Claiming Mechanism

The `claim` function allows the designated foundation address to claim their allocated tokens based on the emissions schedule. Only the foundation's address can call this function, ensuring that no unauthorized parties can claim the tokens. The function calculates the claimable amount based on the percentage for the current year and transfers the tokens to the foundation. It also updates the total amount already claimed to prevent over-claiming in subsequent years. Once tokens are claimed, an event (`Claimed`) is emitted to log the amount and the timestamp of the claim.

## Token Emissions Calculation

The `_claimable` function calculates the claimable amount of tokens for the foundation based on the elapsed time since the vesting start timestamp. The function calculates the number of full years that have passed since the start and uses this to determine the percentage of the total allocation that has been unlocked. The percentages are predefined for each year in the release schedule and gradually decrease over time.

## Security Measures

The contract ensures that only the designated foundation address can claim the tokens by using a simple authorization check in the claim function. If an unauthorized address attempts to call the function, it will revert the transaction with an `Unauthorized` error. The `SafeERC20` library from OpenZeppelin is used to ensure safe token transfers, preventing any issues with transferring the allocated tokens.

## Roles

### Foundation

The foundation, designated as the authorized entity for claiming tokens, can interact with the following functions:

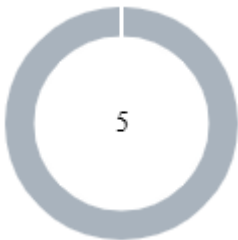
- `function claim()`

### Retrieval Functions

The following functions can be used to retrieve information:

- `function getClaimable()`

# Findings Breakdown



Critical	0
Medium	0
Minor / Informative	5

Severity	Unresolved	Acknowledged	Resolved	Other
Critical	0	0	0	0
Medium	0	0	0	0
Minor / Informative	0	5	0	0

## Diagnostics

● Critical ● Medium ● Minor / Informative

Severity	Code	Description	Status
●	AAC	Allocation Amount Clarification	Acknowledged
●	CCR	Contract Centralization Risk	Acknowledged
●	PAI	Potential Allocation Inconsistency	Acknowledged
●	UTPD	Unverified Third Party Dependencies	Acknowledged
●	L04	Conformance to Solidity Naming Conventions	Acknowledged



## AAC - Allocation Amount Clarification

Criticality	Minor / Informative
Location	FoundationEmissions.sol#L34
Status	Acknowledged

### Description

The `TOTAL_FOUNDATION_ALLOCATION` is equal to `292_699_223 ether`. Additionally, the `TOTAL_FOUNDATION_ALLOCATION` serves the purpose of holding the amount of ant tokens allocated for the `FOUNDATION`. The `ether` suggests that the decimals of the token are 18. However, if the tokens have less than 18 decimals this value will be incorrect.

```
uint256 public constant TOTAL_FOUNDATION_ALLOCATION =  
292_699_223 ether;
```

### Recommendation

It is recommended that the `TOTAL_FOUNDATION_ALLOCATION` is calculated in the constructor while also accounting for the decimals of the ant token. This could be achieved by directly calling the token's `decimals` function.

### Team Update

The team has acknowledged that this is not a security issue and states: *the ANT token is live on Arbiscan at the following link, and it uses 18 decimals.*

<https://arbiscan.io/token/0xa78d8321b20c4ef90ecd72f2588aa985a4bdb684>

## CCR - Contract Centralization Risk

Criticality	Minor / Informative
Location	FoundationEmissions.sol#L60,69
Status	Acknowledged

### Description

The contract's functionality and behavior are heavily dependent on external parameters or configurations. While external configuration can offer flexibility, it also poses several centralization risks that warrant attention. Centralization risks arising from the dependence on external configuration include Single Point of Control, Vulnerability to Attacks, Operational Delays, Trust Dependencies, and Decentralization Erosion.

```
function claim() external {  
    if (msg.sender != FOUNDATION) {  
        revert Unauthorized();  
    }  
    //...  
}
```

Additionally, the contract logic works under the assumption that tokens will be held in the contract. However this essentially means that an external party will be responsible for providing the tokens to the contract.

```
ANT_TOKEN.safeTransfer(FOUNDATION, claimable);
```

### Recommendation

To address this finding and mitigate centralization risks, it is recommended to evaluate the feasibility of migrating critical configurations and functionality into the contract's codebase itself. This approach would reduce external dependencies and enhance the contract's self-sufficiency. It is essential to carefully weigh the trade-offs between external configuration flexibility and the risks associated with centralization.

## PAI - Potential Allocation Inconsistency

Criticality	Minor / Informative
Location	FoundationEmissions.sol#L34
Status	Acknowledged

### Description

The `TOTAL_FOUNDATION_ALLOCATION` is a constant number representing the amount of tokens allocated. However, this number does not account for the actual balance of the contract. This creates an inconsistency between the balance of the contract and the `TOTAL_FOUNDATION_ALLOCATION`.

The balance of the contract should be at least 80% of the `TOTAL_FOUNDATION_ALLOCATION` in order for `FOUNDATION` to receive the amount allocated for them.

```
uint256 public constant TOTAL_FOUNDATION_ALLOCATION =  
292_699_223 ether;
```

### Recommendation

The team could consider adding the necessary logic to the contract to ensure that the balance of the contract matches the 80% of the `TOTAL_FOUNDATION_ALLOCATION`.

### Team Update

The team has acknowledged that this is not a security issue and states: *the necessary amount will be deposited into the contract by the team after deployment.*

## UTPD - Unverified Third Party Dependencies

Criticality	Minor / Informative
Location	FoundationEmissions.sol#L69
Status	Acknowledged

### Description

The contract uses an external contract in order to determine the transaction's flow. The external contract is untrusted. As a result, it may produce security issues and harm the transactions.

```
ANT_TOKEN.safeTransfer(FOUNDATION, claimable);
```

### Recommendation

The contract should use a trusted external source. A trusted source could be either a commonly recognized or an audited contract. The pointing addresses should not be able to change after the initialization.

### Team Update

The team has acknowledged that this is not a security issue and states: \*the ANT token contract is trusted, live and verified on Arbiscan at the following link:

<https://arbiscan.io/token/0xa78d8321b20c4ef90ecd72f2588aa985a4bdb684>\*

## L04 - Conformance to Solidity Naming Conventions

<b>Criticality</b>	Minor / Informative
<b>Location</b>	FoundationEmissions.sol#L35,37
<b>Status</b>	Acknowledged

### 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.

```
IERC20 public immutable ANT_TOKEN  
address public immutable FOUNDATION
```

### Recommendation

By following the Solidity naming convention guidelines, the codebase increased the readability, maintainability, and makes it easier to work with.

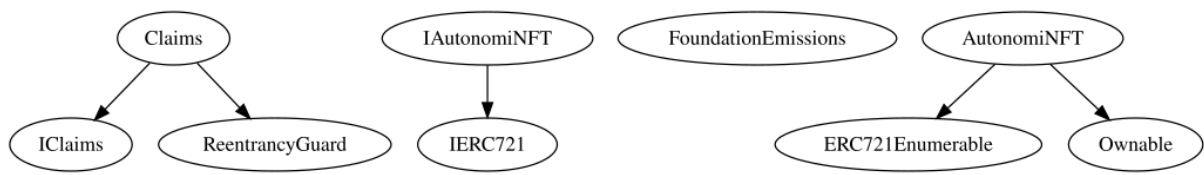
Find more information on the Solidity documentation

<https://docs.soliditylang.org/en/stable/style-guide.html#naming-conventions>.

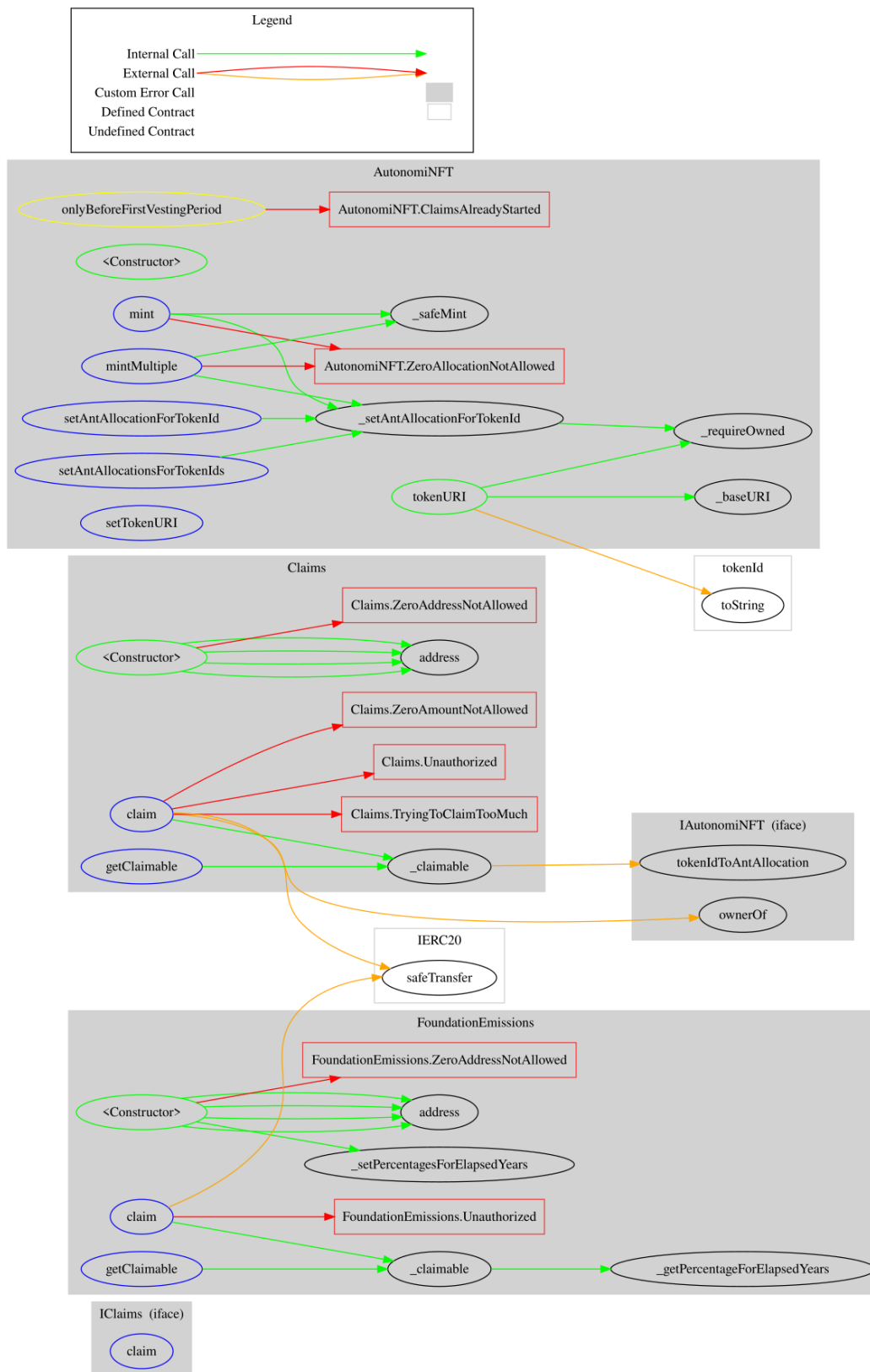
## Functions Analysis

Contract	Type	Bases		
	Function Name	Visibility	Mutability	Modifiers
FoundationEmissions	Implementation			
		Public	✓	-
	claim	External	✓	-
	getClaimable	External		-
	_claimable	Internal		
	_getPercentageForElapsedYears	Internal		
	_setPercentagesForElapsedYears	Internal	✓	

## Inheritance Graph



# Flow Graph





## Summary

Autonomi FoundationEmissions contract implements a vesting mechanism. This audit investigates security issues, business logic concerns and potential improvements. The Smart Contract analysis reported no compiler errors or critical issues.

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Blockchain technology and cryptographic assets present a high level of ongoing risk. Cyberscope's position is that each company and individual are responsible for their own due diligence and continuous security. Cyberscope's goal is to help reduce the attack vectors and the high level of variance associated with utilizing new and consistently changing technologies and in no way claims any guarantee of security or functionality of the technology we agree to analyze. The assessment services provided by Cyberscope are subject to dependencies and are under continuing development. You agree that your access and/or use including but not limited to any services reports and materials will be at your sole risk on an as-is where-is and as-available basis. Cryptographic tokens are emergent technologies and carry with them high levels of technical risk and uncertainty. The assessment reports could include false positives, false negatives and other unpredictable results. The services may access and depend upon multiple layers of third parties.

# About Cyberscope

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**

[cyberscope.io](https://cyberscope.io)