0x Guard

Smart contracts security assessment

Final report

Tariff: Standard

Bamboo Finance

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Contents

Introduction

This report has been prepared for the Bamboo Finance team upon their request.

The audited project is a fork of the Tomb Finance Project.

The purpose of this audit was to ensure that no issues were introduced with the changes to the original code and that known vulnerabilities (e.g. circumventing the protocol's fee system) are fixed prior to deployment.

Further details about Bamboo Finance are available at the official website: http://www.bamboofinance.info.

Name	Bamboo Finance
Audit date	2022-05-14 - 2022-05-19
Language	Solidity
Platform	Avalanche Network

Contracts checked

Name	Address
BAM	https://snowtrace.io/address/0x5cc339aa2a582d857f38b85f662ea3513706a1e7#code
BBOND	https://snowtrace.io/address/0x596d03DA97B670264E2AC35C92264942913e77Bd#code
BDAO	https://snowtrace.io/address/0x83c7412931398502922a35911E5Fab221822f4B6#code
BDAORewardPool	https://snowtrace.io/address/0x80eC36d02815d58186DC6f430d24a2309e308450#code
BAMGenesisRewardPool	https://snowtrace.io/address/0xBB1320524c0903a1C6833fE4c6927Ec7AfDa457A#code

BAMRewardPool	https://snowtrace.io/address/0x29B115599C648fE97b65E02951e7f038816ed25c#code
Oracle	https://snowtrace.io/address/0x309E65aec68845447C3b9288276056a152862a42#code
Boardroom	https://snowtrace.io/address/0x1A86B4f3b34E8e5B1d0b612912f795eFe475B996#code
Treasury	https://snowtrace.io/address/0x5212989FC97ABBA4913743327796a63D09b4Da13#code
BAM Node	https://snowtrace.io/address/0xE789447d231513910BF464b3318906d5bD1Fe3F3#code
BDAO Node	https://snowtrace.io/address/0xF3AC776D96fbe181A4fbFb70aE8B8bCe9dFD1b0C#code
BAM/USDC LP	https://snowtrace.io/address/0xbe7C737FCC2D6EBA0e4e73A073a0120171287769#code
BDAO/USDC LP	https://snowtrace.io/address/0x0774F0acC4DD1CA84BC8521FEe6dC2f7D22f133f#code
Multiple contracts	

Procedure

We perform our audit according to the following procedure:

Automated analysis

- Scanning the project's smart contracts with several publicly available automated Solidity analysis tools
- Manual verification (reject or confirm) all the issues found by the tools

Manual audit

- Comparing the project to the Tomb Finance implementation

Classification of issue severity

High severity	High severity issues can cause a significant or full loss of funds, change of contract ownership, major interference with contract logic. Such issues require immediate attention.
Medium severity	Medium severity issues do not pose an immediate risk, but can be detrimental to the client's reputation if exploited. Medium severity issues may lead to a contract failure and can be fixed by modifying the contract state or redeployment. Such issues require attention.
Low severity	Low severity issues do not cause significant destruction to the contract's functionality. Such issues are recommended to be taken into consideration.

Issues

High severity issues

No issues were found

Medium severity issues

1. Commission tokens (BAMGenesisRewardPool)

On L784-788 when transferring a commission token, the same commission is charged. Token `usdc` set may have different commissions or change them, so the calculation of `user.amount` may be violated.

Recommendation: It is recommended to compare the balance of the token before and after the execution of the `pool.token.safeTransferFrom()` function, thus you will find out how much is spent on the commission.

2. Variables are not limited (BAM Node)

The `treasuryFeePercent`, `dripRate` and `maxReturnPercent` variables are not limited when

changed in their respective set functions(`setTreasuryFeePercent()`, `setDripRate()`, `setMaxReturnPercent()`). The lack of a restriction may affect the receipt of rewards by users.

Recommendation: With the `require` construct, limit these variables to some range in their set functions.

3. Variables are not limited (BDAO Node)

The `treasuryFeePercent`, `dripRate` and `maxReturnPercent` variables are not limited when changed in their respective set functions(`setTreasuryFeePercent()`, `setDripRate()`, `setMaxReturnPercent()`). The lack of a restriction may affect the receipt of rewards by users.

Recommendation: With the `require` construct, limit these variables to some range in their set functions.

Low severity issues

1. Reentrancy attack (BDAORewardPool)

When withdrawing, some pool tokens may be subject to a reentrancy attack. The variable `user.rewardDebt` on L802 is updated after calling `pool.token.safeTransfer()`.

Recommendation: It is recommended to update the value of the `user.rewardDebt` variable before calling `pool.token.safeTransfer()`.

2. Reentrancy attack (BAMGenesisRewardPool)

When withdrawing, some pool tokens may be subject to a reentrancy attack. The variable `user.rewardDebt` on L814 is updated after calling `pool.token.safeTransfer()`.

Recommendation: It is recommended to update the value of the `user.rewardDebt` variable before calling `pool.token.safeTransfer()`.

3. Reentrancy attack (BAMRewardPool)

When withdrawing, some pool tokens may be subject to a reentrancy attack. The variable `user.rewardDebt` on L806 is updated after calling `pool.token.safeTransfer()`.

Recommendation: It is recommended to update the value of the `user.rewardDebt` variable before calling `pool.token.safeTransfer()`.

4. Few events (Multiple contracts)

Many set functions from contracts are missing events when changing important values in the contact.

Recommendation: Create events for these set functions.

Conclusion

0 high, 3 medium, 4 low severity issues were found.

The Bamboo Finance Project was compared with the Tomb Project. Bamboo Finance has changed the implementation of Token contracts. New contracts have been added: Node contract, LP token contract.

The changed contracts is not affected by the vulnerability that was discovered in the Tomb before because it doesn't contain the implementation of transfer with taxes.

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