Application Security Assessment Report

Of

Andhra Pradesh Pollution Control Board,

Pollution control board,

Govt. of AP

Dated 17/07/2019

By

Andhra Pradesh Technology Services

3rd Floor, R&B Building, M.G. Road, Labbipet,

Vijayawada – 520010. Andhra Pradesh

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1. Executive Summary

## Introduction

The Board is a statutory organization entrusted to implement Environmental Laws and rules within the state of Andhra Pradesh, India. The Board was constituted as State Board for Prevention and Control of Water Pollution, in 1976, under the Water (Prevention and Control of Pollution) Act. 1974, but was later rechristened as A.P. Pollution Control Board, subsequent to the enactment of the Air (Prevention and Control of Pollution) Act, 1981.

Andhra Pradesh Technology Services (hereon referred as APTS) performed the Application Security Assessment of APPCB Application for APPCB Department to determine, if any weakness exist in the application.

## Engagement Specific Details

|  |  |  |
| --- | --- | --- |
| 1. **S. No.** | **Activity** | 1. **Date** |
| 1. 1. | 1. Start date of engagement | 1. 16/07/2019 |
| 1. 2. | 1. Submission date of initial report | 1. 18/07/2019 |
| 1. 3. | 1. Submission date of Confirmatory review report | 1. 12/09/2019 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. **S. No** | **Area** | **Review Performed By** | **Application SPOC** | **Department Name** |
| 1. 1. | 1. Application Security Assessment | APTS Security Audit TEAM | 1. srinivas rao | APPCB |

|  |  |  |  |
| --- | --- | --- | --- |
| 1. **S. No** | **Date** | **Version Number** | 1. **Remarks** |
| 1. 1. | 1. 18/07/2019 | 1. v1.0 | 1. Initial Review |
| 1. 2. | 1. 12/09/2019 | 1. v2.0 | 1. Confirmatory review |

## Scope Details

### Inclusion

1. **Web Application Security Assessment & Penetration Testing**

Application Name: APPCB

Application URL: https://tptuat.aponline.gov.in/pollutioncb/

Environment: Staging Server

Version Number [or] Latest Compilation Timestamp: Not provided

Type of Review: Black box

Hash of Zipped Source Code (SHA512): Not provided

User Accounts Tested:Not Applicable

### Exclusion

1. Secure Code Review
2. Process Review
3. Secure Network Architecture Review
4. Server Vulnerability Assessment

## Approach & Methodology

1. The web application security assessment was conducted in line with the leading security standards and guidelines for web application security such as OWASP.
2. The approach followed for the security assessment is detailed below:

### Information Gathering:

We conducted a walkthrough of the web application to assess the scope of the security assessment and obtain the following information to identify the potential attack vectors:

* 1. Functionalities available in the web application
  2. Entry points for the web application
  3. Web application is custom developed or off-the-shelf application
  4. Protocols used by the web application
  5. Back-end technology including web server, framework, and development language
  6. Conduct search engine discovery and reconnaissance
  7. Banner grabbing (finger printing) to identify the running version of web server / application server and framework
  8. Enumerate application on web server to identify other applications running on the server
  9. View source of the web application to review the comments and metadata
  10. Map functionalities and data flow to identify attack vectors

### Automated & Manual Scanning:

We performed an unauthenticated automated & Manual scanning (without the knowledge of user credentials) of the web application URL using commercial and open source tools. The scanning was conducted to identify any known vulnerabilities in the subjected application.

### Analyse results and reporting:

We then analysed the results from manual inspection to identify the vulnerabilities applicable to the web application. The risk classification for each of these vulnerabilities was identified based on the likelihood of occurrence, impact, and level of access required to exploit these vulnerability as per the risk classification methodology detailed in 1.5 of the report.

1. An exception based detailed report is prepared with the following:
2. Description of the vulnerability
3. Risk Rating
4. Impact & Root Cause
5. Recommendation including reference links

## Risk Categorization

The risk ratings assigned to each finding in this report are based on 3 dimensions – Likelihood, Impact, and Level of access required. These are defined below.

|  |  |  |
| --- | --- | --- |
| **Likelihood** | High | Attacker can use existing tools to exploit the vulnerability by following prescriptive instructions and without knowledge of coding/platforms. Target can be exploited directly. Finding assists with exploitation of or is linked to other high or critical risk findings. |
| Medium | Attacker must have knowledge of coding/platforms and may require customisation of tools (e.g. batch scripts, shell scripts, Metasploit module customization) to exploit the vulnerability.  Exploitation of target may require setup of additional infrastructure or processes. |
| Low | High level of skill required to exploit. Attacker must develop their own tools or processes (e.g. custom written exploit code) to successfully exploit the vulnerability.  Publicly available exploits were not identified.  Exploitation of target requires setup of additional infrastructure or processes (e.g. Spear Phishing). |
| **Impact** | Severe | Vulnerability may lead to widespread administrator access to multiple materially sensitive systems (e.g. Enterprise Administrator), or access to the internal network from the Internet. |
| Major | Vulnerability may lead to immediate access to sensitive or materially sensitive data, or highly privileged access to critical business systems, or a severe and extended disruption to critical business systems or operations, with impact to many users or sites. |
| Moderate | Vulnerability may lead to access to sensitive data, or privileged access to critical business systems, or partial disruption to critical business systems or operations, with impact to some users or sites. |
| Minor | Vulnerability may lead to:  Access to non-sensitive data, or  Access to non-critical business systems, or  Disruption to non-critical business systems or operations, with limited impact to users/sites. |
| Insignificant | Information disclosure of non-sensitive enticement information (e.g. IP addresses, hostnames, system information) with no direct impact to availability. |
| **Level of access required** | Privileged | Privileged user (e.g. administrator). |
| Non-privileged | General user (e.g. domain user). |
| Internal Anonymous | Unauthenticated user with access to the internal network. |
| External Anonymous | Unauthenticated Internet user (includes web applications that allow self-registration). |

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| --- | --- | --- | --- | --- |
| **Consequence**  **Likelihood** | **Small** | **Moderate** | **Severe** | **Catastrophic** |
| **Low** | Info | Low | Medium | Medium |
| **Moderate** | Low | Medium | Medium | High |
| **High** | Low | Medium | High | High |
| **Very High** | Medium | High | High | High |

The final risk ratings are defined as follows:

|  |  |
| --- | --- |
| High | Urgent action should be taken to address findings. |
| Medium | Action should be taken to address findings in a timely manner.  Out of cycle change and compensating controls may be required. |
| Low | No immediate action required. Remediation items can be implemented during the next scheduled change window. |
| Information | No immediate risks to the environment were identified as part of the testing. Findings are informational only. |

Note: The above matrices are intended to be used as a guide only in determining the appropriate risk rating for a particular vulnerability. Other factors may need to be considered when weighing up the final risk rating, such as the number of servers/applications affected by the vulnerability, nature of system’s affected (e.g. Production, Development, and Test), and nature of data accessed or disclosed.

## Vulnerability Summary

Below is the summary of open vulnerabilities that still exist in the application.

|  |  |  |  |
| --- | --- | --- | --- |
| **Review Area** | **Initial Review** | | |
| **High** | **Medium** | **Low** |
| **Web Application Security Assessment** | 0 | 4 | 4 |
| **Total** |  |  | **8** |
|

### Distribution of Observation

1. Detailed Observation

## Web Application Security Assessment & Penetration Testing

|  |  |  |
| --- | --- | --- |
| 1. **Insufficient Anti Automation** | **Risk Rating**: Medium | **Complied Status:** complied and closed |
| **Description** | Insufficient Anti-automation is when a web site permits an attacker to automate a process that should only be performed manually. Certain web site functionalities should be protected against automated attacks. The captcha should be implemented in such a way that it should not be read by any automated scanners (or) Bots. | |
| **Affected Path(s)** | <https://tptuat.aponline.gov.in/pollutioncb/AppointmentMS.aspx>  https://pcb.ap.gov.in/FeedBack\_New.aspx  https://pcb.ap.gov.in/AppointmentMS.aspx  https://pcb.ap.gov.in/appcbea/pcbea/login.aspx  https://pcb.ap.gov.in/appcbea/pcbea/home/contact\_us.aspx | |
| **Impact** | Attackers could repeatedly exercise web site functionality attempting to exploit or defraud the system. An automated robot could potentially execute thousands of requests a minute, causing potential loss of performance or service. | |
| **Evidence/Proof of Concept:**  **Step 1:**In the make an appointment web page the captcha is not implemented  captcha not implemented.png | | |
| **Recommendation** | It is recommended to implement captcha.  <http://www.captcha.net>  <http://projects.webappsec.org/w/page/13246938/InsufficientAnti-automation> | |
| **Management Comments** |  | |

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| --- | --- | --- |
| 1. **Email id disclosure** | **Risk Rating**: Medium | **Complied Status:** Not complied and Open |
| **Description** | During assessment, we found the email ids in web page which is not a good practice suggested by the OWASP community. The spam-bots (also known as email harvesters and email extractors) are programs that source the internet looking for email addresses on any website they come across. Spam bot programs look for strings like myname@mydomain.com and then record any addresses found. | |
| **Affected Path(s)** | https://tptuat.aponline.gov.in/pollutioncb [/contact-us.html](https://tptuat.aponline.gov.in/pollutioncb/contact-us.html)  https://tptuat.aponline.gov.in/pollutioncb /bio-medical-waste-management.html  https://tptuat.aponline.gov.in/pollutioncb /hazardous-waste-management.html  https://pcb.gov.in[/contact-us.html](https://tptuat.aponline.gov.in/pollutioncb/contact-us.html)  https://pcb.gov.in /bio-medical-waste-management.html  https://pcb.gov.in /hazardous-waste-management.html | |
| **Impact** | Disclosing mail ids sometimes lead to social engineering attacks and often affected with the spam mails. However, email addresses of developers and other individuals (whether appearing on-screen or hidden within page source) may disclose information that is useful to an attacker; for example, they may represent usernames that can be used at the application's login. | |
| **Evidence/Proof of Concept**  **Step 1:** E-mail address disclosure in the web application.  email ids discloser .png | | |
| **Recommendation** | Obfuscate email address or Spell out email addresses(Please enclose the email address with example [at] gmail [dot] com)  Refer:  https://stackoverflow.com/questions/748780/best-way-to-obfuscate-an-e-mail-address-on-a-website  https://stackoverflow.com/questions/11563283/why-write-at-and-dot-in-email-rather-than-and  https://academia.stackexchange.com/questions/55612/why-do-people-in-academia-tend-to-write-their-email-address-with-dot-at  https://stackoverflow.com/questions/483212/effective-method-to-hide-email-from-spam-bots | |
| **Management Comments** |  | |

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| 1. **Stack trace Error** | **Risk Rating**: Medium | **Complied Status:** complied and Closed |
| **Description** | The application responds with stack traces that are not managed which could reveal information useful to attackers. Providing debugging information as a result of operations that generate errors is considered a bad practice due to multiple reasons. For example, it may contain information on internal workings of the application such as relative paths of the point where the application is installed or how objects are referenced internally. | |
| **Affected Path(s)** | https://tptuat.aponline.gov.in/pollutioncb /  https://tptuat.aponline.gov.in/pollutioncb /a\_external\_advisory\_committe\_New.aspx  https://tptuat.aponline.gov.in/pollutioncb /a\_real\_time\_noise\_monitoring\_stations.aspx  https://tptuat.aponline.gov.in/pollutioncb /content-management-cfe.aspx  https://tptuat.aponline.gov.in/pollutioncb /content-management-cfo.aspx  https://tptuat.aponline.gov.in/pollutioncb /continuous-ambient-air-quality-monitoring-stations-caaqms.aspx  https://tptuat.aponline.gov.in/pollutioncb /feedback.aspx  https:pcb.gov.in/  https:pcb.gov.in/a\_external\_advisory\_committe\_New.aspx  https:pcb.gov.in /a\_real\_time\_noise\_monitoring\_stations.aspx  https:pcb.gov.in /content-management-cfe.aspx  https:pcb.gov.in /content-management-cfo.aspx  https:pcb.gov.in /continuous-ambient-air-quality-monitoring-stations-caaqms.aspx  https:pcb.gov.in /feedback.aspx | |
| **Impact** | An attacker can obtain information such as:  • ASP.NET version.  • Physical file path of temporary ASP.NET files.  • Information about the generated exception and possibly source code, SQL queries, etc.  This information might help an attacker gain more information and potentially focus on the development of further attacks for the target system | |
| **Evidence/Proof of Concept**  **Step 1:** It is observed in the error page that the internal path of application is being displayed.  stack traces.png | | |
| **Recommendation** | Disable the trace in the web.config file.  Reference links: Disable the trace in the web.Config file.  Reference links:  Refer:  https://forums.asp.net/t/1729685.aspx?How+to+disable+Stack+TraceinAspnetWeb+pplication  https://dotnetstories.wordpress.com/2007/10/13/the-worst-5-mistakes-in-the-webconfig-file/ | |
| **Management Comments** |  | |

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| 1. **Directory Listing** | **Risk Rating**: Medium | **Complied Status:** complied and Closed |
| **Description** | The web server is configured to display the list of files contained in this directory. This is not recommended because the directory may contain files that are not normally exposed through links on the web site. | |
| **Affected Path(s)** | https://pcb.ap.gov.in/appcbea/pcbea/ | |
| **Impact** | A user can view a list of all files from this directory possibly exposing sensitive information. | |
| **Evidence/Proof of Concept**  **Step-1:** Directories are being enumerated for the application as shown below.  directory listing.png | | |
| **Recommendation** | * Disable directory listings in the web- or application-server configuration by default. * Restrict access to unnecessary directories and files. * Create an index (default) file for each directory.   Reference link:  https://cwe.mitre.org/data/definitions/538.html | |
| **Management Comments** |  | |

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| --- | --- | --- |
| 1. **Unencrypted \_\_VIEWSTATE parameter** | **Risk Rating**: Low | **Complied Status:** complied and Closed |
| **Description** | The \_\_VIEWSTATE parameter is not encrypted. To reduce the chance of someone intercepting the information stored in the ViewState, it is good design to encrypt the View State. To do this, set the machineKey validation type to AES. This instructs ASP.NET to encrypt the View State value using the Advanced Encryption Standard. | |
| **Affected Path(s)** | https://tptuat.aponline.gov.in/pollutioncb [/a\_external\_advisory\_committe\_New.aspx](https://tptuat.aponline.gov.in/pollutioncb/a_external_advisory_committe_New.aspx)  https://tptuat.aponline.gov.in/pollutioncb [/a\_real\_time\_noise\_monitoring\_stations.aspx](https://tptuat.aponline.gov.in/pollutioncb/a_real_time_noise_monitoring_stations.aspx)  https://tptuat.aponline.gov.in/pollutioncb [/content-management-cfe.aspx](https://tptuat.aponline.gov.in/pollutioncb/content-management-cfe.aspx)  https://tptuat.aponline.gov.in/pollutioncb [/feedback.aspx](https://tptuat.aponline.gov.in/pollutioncb/feedback.aspx)  https:pcb.gov.in[/a\_external\_advisory\_committe\_New.aspx](https://tptuat.aponline.gov.in/pollutioncb/a_external_advisory_committe_New.aspx)  https:pcb.gov.in [/a\_real\_time\_noise\_monitoring\_stations.aspx](https://tptuat.aponline.gov.in/pollutioncb/a_real_time_noise_monitoring_stations.aspx)  https:pcb.gov.in [/content-management-cfe.aspx](https://tptuat.aponline.gov.in/pollutioncb/content-management-cfe.aspx)  https:pcb.gov.in [/feedback.aspx](https://tptuat.aponline.gov.in/pollutioncb/feedback.aspx) | |
| **Impact** | Possible sensitive information disclosure | |
| **Evidence/Proof of Concept**  **Step 1:** It is observed that the VIEWSTATE parameter in the web application is unencrypted and is easily readable, it is recommended to encrypt it.  uncrypted view state.png | | |
| **Recommendation** | Open Web.Config and add the following line under the <system.web> element:  <machine Key validation="AES"/>  Reference links:  https://abhijitjana.net/2011/01/26/how-to-make-viewstate-secure-in-asp-net/  <https://docs.microsoft.com/en-us/previous-versions/dotnet/netframework-4.0/w8h3skw9(v=vs.100)> | |
| **Management Comments** |  | |

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| --- | --- | --- |
| 1. **Click jacking** | **Risk Rating**: Low | **Complied Status:** complied and Closed |
| **Description** | Click jacking is a malicious technique of tricking a Web user into clicking on something different from what the user perceives they are clicking on, thus potentially revealing confidential information or taking control of their computer while clicking on seemingly innocuous web pages. | |
| **Affected Path(s)** | /index.aspx | |
| **Impact** | Tricking the user to click on the link by framing the original page and showing a layer on top of it with dummy buttons which leads to Phishing attack | |
| **Evidence/Proof of Concept**  step!the website can be loaded in iframe by using the code  Annotation 2019-07-17 102629.png  **Step 2**:the website is being loaded in the iframe  clickjacking1.png | | |
| **Recommendation** | Sites can use X-Frame-Options to avoid click jacking attacks, by ensuring that their content is not embedded into other sites.  It is recommended to perform the following:  Use the X-FRAME Options in response header set to DENY or Same Origin or ALLOW-FROM a specified URL X-Frame-Options: This header works with modern browsers and can be used to prevent framing of the page. | |
|  |  | |

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| 1. **Weak CAPTCHA** | **Risk Rating**: Low | **Complied Status:** complied and Closed |
| **Description** | A computer program or system intended to distinguish human from machine input, typically as a way of thwarting spam and automated extraction of data from websites. | |
| **Affected Path(s)** | https://tptuat.aponline.gov.in/pollutioncb/feedback.aspx | |
| **Impact** | If the CAPTCHA is easily decoded by the program then it can be used in automated tool attacks. | |
| **Evidence/Proof of Concept**  **Step 1:** We have collected few CAPTCHA images generated by the web page <https://tptuat.aponline.gov.in/pollutioncb/feedback.aspx>  Annotation 2019-07-18 160014.png  captch1.png  **Step 2:**We use OCR tool like “Tesseract”, to extract the code from image file. The samples have been decoded exactly and matched all the way, this suggests that the CAPTCHA image is easily readable by automated programs.  recaptcha.png | | |
| **Recommendation** | Implement stronger CAPTCHA mechanism which is not easily readable by OCR Technology.  Use “noise” in the CAPTCHA image.  Reference Links:  https://www.scribd.com/document/26860983/Strong-CAPTCHA-Guidelines | |

|  |  |  |
| --- | --- | --- |
| 1. **Technology/Version Disclosure** | **Risk Rating**: Low | **Complied Status:** complied and Closed |
| **Description** | The HTTP responses returned by this web application include a header named X-AspNet-Version. The value of this header is used by Visual Studio to determine which version of ASP.NET is in use. It is not necessary for production sites and should be disabled. | |
| **Affected Path(s)** | /(web server) | |
| **Impact** | The HTTP header may disclose sensitive information. This information can be used to launch further attacks | |
| **Evidence/Proof of Concept**  **Step 1:** It is observed in the response that the version information is being displayed  version disclosure.png | | |
| **Recommendation** | Change the configuration settings in the server to not display the version information in response and also do not display this information in error pages, design a custom error page.  https://scotthelme.co.uk/hardening-your-http-response-headers/Reference Links:  Reference:  https://www.saotn.org/remove-iis-server-version-http-response-header/  https://scotthelme.co.uk/hardening-your-http-response-headers/  https://cwe.mitre.org/data/definitions/200.html  https://www.saotn.org/remove-iis-server-version-http-response-header/  https://github.com/aspnet/Hosting/issues/571  https://www.tunetheweb.com/security/http-security-headers/server-header/  https://www.tecmint.com/hide-apache-web-server-version-information/ | |

|  |  |  |
| --- | --- | --- |
| 1. **Improper Error Handling** | **Risk Rating**: Low | **Complied Status:** Not complied and Open |
| **Description** | 1. The application is not configured to display any generic error message rather it displays the application version details. Application error or warning messages may expose sensitive information about an application's internal workings to an attacker | |
| **Affected Path(s)** | https://tptuat.aponline.gov.in/pollutioncb /  https://tptuat.aponline.gov.in/pollutioncb /a\_external\_advisory\_committe\_New.aspx  https://tptuat.aponline.gov.in/pollutioncb /a\_real\_time\_noise\_monitoring\_stations.aspx  https://tptuat.aponline.gov.in/pollutioncb /content-management-cfe.aspx  https://tptuat.aponline.gov.in/pollutioncb /content-management-cfo.aspx  https://tptuat.aponline.gov.in/pollutioncb /continuous-ambient-air-quality-monitoring-stations-caaqms.aspx  https://tptuat.aponline.gov.in/pollutioncb /feedback.aspx | |
| **Impact** | An attacker makes use of the details found to perform the concentrated attacks based on the vulnerabilities present in the current version. | |
| **Evidence/Proof of Concept**  **Step 1: By accesing the URL’s in the affected path(s) the application is showing error messages as shown in below image** | | |
| **Recommendation** | Verify that this page is disclosing error or warning messages and properly configure the application to log errors to a file instead of displaying the error to the user.  References Links:  https://www.c-sharpcorner.com/blogs/handling-verbose-error-messageimproper-errorhandling-in-webconfig  https://stackoverflow.com/questions/4363941/asp-net-customerrors-mode-off-error-when-tryingto-access-working-webpage | |
|  |  | |

1. Appendix

## OWASP Checklist

The Application Security Assessment has been evaluated as per Open Web Application Security Project Testing guide v4.0 as follows:

| **Ref. No.** | | **Category** | | **Test Name** | **Safe?** | **Remarks** |
| --- | --- | --- | --- | --- | --- | --- |
| 1.1 | | **Information Gathering** | | | | |
| 1.1.1 | | OTG-INFO-001 | | Conduct Search Engine Discovery and Reconnaissance for Information Leakage | Yes | Tested Not Vulnerable |
| 1.1.2 | | OTG-INFO-002 | | Fingerprint Web Server | Yes | Tested, Not Vulnerable |
| 1.1.3 | | OTG-INFO-003 | | Review Web server Metafiles for Information Leakage | Yes | Tested Not Vulnerable |
| 1.1.4 | | OTG-INFO-004 | | Enumerate Applications on Web server | No | Not Applicable |
| 1.1.5 | | OTG-INFO-005 | | Review Webpage Comments and Metadata for Information Leakage | Yes | Tested Not Vulnerable |
| 1.1.6 | | OTG-INFO-006 | | Identify application entry points | Yes | Tested Not Vulnerable |
| 1.1.7 | | OTG-INFO-007 | | Map execution paths through application | Yes | Refer the vulnerability reported in 2.1 |
| 1.1.8 | | OTG-INFO-008 | | Fingerprint Web Application Framework | Yes | Tested Not Vulnerable |
| 1.1.9 | | OTG-INFO-009 | | Fingerprint Web Application | NA | Not Applicable |
| 1.1.10 | | OTG-INFO-010 | | Map Application Architecture | NA | Not Applicable |
| 1.2 | | **Configuration and Deploy Management Testing** | | | | |
| 1.2.1 | | OTG-CONFIG-001 | | Test Network/Infrastructure Configuration | NA | Not Applicable |
| 1.2.2 | | OTG-CONFIG-002 | | Test Application Platform Configuration | Yes |  |
| 1.2.3 | | OTG-CONFIG-003 | | Test File Extensions Handling for Sensitive Information | Yes | Tested Not Vulnerable |
| 1.2.4 | | OTG-CONFIG-004 | | Backup and Unreferenced Files for Sensitive Information | Yes | Tested ,not vulnerable |
| 1.2.5 | | OTG-CONFIG-005 | | Enumerate Infrastructure and Application Admin Interfaces | Yes | Tested Not Vulnerable |
| 1.2.6 | | OTG-CONFIG-006 | | Test HTTP Methods | Yes | Tested Not Vulnerable |
| 1.2.7 | | OTG-CONFIG-007 | | Test HTTP Strict Transport Security | No | Not Applicable |
| 1.2.8 | | OTG-CONFIG-008 | | Test RIA cross domain policy | No | Cross-domain policy page not found |
| 1.3 | | **Identity Management Testing** | | | | |
| 1.3.1 | | OTG-IDENT-001 | | Test Role Definitions | NA | Not Applicable |
| 1.3.2 | | OTG-IDENT-002 | | Test User Registration Process | NA | Not Applicable |
| 1.3.3 | | OTG-IDENT-003 | | Test Account Provisioning Process | NA | Not Applicable |
| 1.3.4 | | OTG-IDENT-004 | | Testing for Account Enumeration and Guessable User Account | NA | Not Applicable |
| 1.3.5 | | OTG-IDENT-005 | | Testing for Weak or unenforced username policy | NA | Not Applicable |
| 1.3.6 | | OTG-IDENT-006 | | Test Permissions of Guest/Training Accounts | NA | Not Applicable |
| 1.3.7 | | OTG-IDENT-007 | | Test Account Suspension/Resumption Process | NA | Not Applicable |
| 1.4 | **Authentication Testing** | | | | | |
| 1.4.1 | OTG-AUTHN-001 | | | Testing for Credentials Transported over an Encrypted Channel | NA | Not Applicable |
| 1.4.2 | OTG-AUTHN-002 | | | Testing for default credentials | NA | Not Applicable |
| 1.4.3 | OTG-AUTHN-003 | | | Testing for Weak lock out mechanism | NA | Not Applicable |
| 1.4.4 | OTG-AUTHN-004 | | | Testing for bypassing authentication schema | NA | Not Applicable |
| 1.4.5 | OTG-AUTHN-005 | | | Test remember password functionality | NA | Not Applicable |
| 1.4.6 | OTG-AUTHN-006 | | | Testing for Browser cache weakness | NA | Not Applicable |
| 1.4.7 | OTG-AUTHN-007 | | | Testing for Weak password policy | NA | Not Applicable |
| 1.4.8 | OTG-AUTHN-008 | | | Testing for Weak security question/answer | NA | Not Applicable |
| 1.4.9 | OTG-AUTHN-009 | | | Testing for weak password change or reset functionalities | NA | Not Applicable |
| 1.4.10 | OTG-AUTHN-010 | | | Testing for Weaker authentication in alternative channel | NA | Not Applicable |
| 1.5 | **Authorization Testing** | | | | | |
| 1.5.1 | OTG-AUTHZ-001 | | | Testing Directory traversal/file include | No | Tested, Vulnerable |
| 1.5.2 | OTG-AUTHZ-002 | | | Testing for bypassing authorization schema | Yes | Tested Not Vulnerable |
| 1.5.3 | OTG-AUTHZ-003 | | | Testing for Privilege Escalation | Yes | Tested Not Vulnerable |
| 1.5.4 | OTG-AUTHZ-004 | | | Testing for Insecure Direct Object References | Yes | Tested Not Vulnerable |
| 1.6 | **Session Management Testing** | | | | | |
| 1.6.1 | OTG-SESS-001 | | | Testing for Bypassing Session Management Schema | NA | Not Applicable |
| 1.6.2 | OTG-SESS-002 | | | Testing for Cookies attributes | Yes | Tested Not Vulnerable |
| 1.6.3 | OTG-SESS-003 | | | Testing for Session Fixation | NA | Not Applicable |
| 1.6.4 | OTG-SESS-004 | | | Testing for Exposed Session Variables | Yes | Tested Not Vulnerable |
| 1.6.5 | OTG-SESS-005 | | | Testing for Cross Site Request Forgery | NA | Not Applicable |
| 1.6.6 | OTG-SESS-006 | | | Testing for logout functionality | Yes | Not Applicable |
| 1.6.7 | OTG-SESS-007 | | | Test Session Timeout | Yes | Not Applicable |
| 1.6.8 | OTG-SESS-008 | | | Testing for Session puzzling | NA | Not Applicable |
| 1.7 | **Data Validation Testing** | | | | | |
| 1.7.1 | OTG-INPVAL-001 | | | Testing for Reflected Cross Site Scripting | Yes | Tested Not Vulnerable |
| 1.7.2 | OTG-INPVAL-002 | | | Testing for Stored Cross Site Scripting | Yes | Tested Not Vulnerable |
| 1.7.3 | OTG-INPVAL-003 | | | Testing for HTTP Verb Tampering | Yes | Tested Not Vulnerable |
| 1.7.4 | OTG-INPVAL-004 | | | Testing for HTTP Parameter pollution | Yes | Tested Not Vulnerable |
| 1.7.5 | OTG-INPVAL-005 | | | Testing for SQL Injection | Yes | Tested Not Vulnerable |
| 1.7.5.1 |  | | | Oracle Testing | Yes | Tested Not Vulnerable |
| 1.7.5.2 |  | | | MySQL Testing | Yes | Tested Not Vulnerable |
| 1.7.5.3 |  | | | SQL Server Testing | Yes | Tested Not Vulnerable |
| 1.7.5.4 |  | | | Testing PostgreSQL | Yes | Tested Not Vulnerable |
| 1.7.5.5 |  | | | MS Access Testing | Yes | Tested Not Vulnerable |
| 1.7.5.6 |  | | | Testing for NoSQL injection | Yes | Tested Not Vulnerable |
| 1.7.6 | OTG-INPVAL-006 | | | Testing for LDAP Injection | NA | Not Applicable |
| 1.7.7 | OTG-INPVAL-007 | | | Testing for ORM Injection | NA | Not Applicable |
| 1.7.8 | OTG-INPVAL-008 | | | Testing for XML Injection | NA | No XML Pages |
| 1.7.9 | OTG-INPVAL-009 | | | Testing for SSI Injection | Yes | Tested Not Vulnerable |
| 1.7.10 | OTG-INPVAL-010 | | | Testing for XPath Injection | Yes | Tested Not Vulnerable |
| 1.7.11 | OTG-INPVAL-011 | | | IMAP/SMTP Injection | NA | Not Applicable |
| 1.7.12 | OTG-INPVAL-012 | | | Testing for Code Injection | NA | Not Applicable |
| 1.7.12.1 |  | | | Testing for Local File Inclusion | NA | Not Applicable |
| 1.7.12.2 |  | | | Testing for Remote File Inclusion | NA | Not Applicable |
| 1.7.13 | OTG-INPVAL-013 | | | Testing for Command Injection | Yes | Tested Not Vulnerable |
| 1.7.14 | OTG-INPVAL-014 | | | Testing for Buffer overflow | NA | Not Applicable |
| 1.7.14.1 |  | | | Testing for Heap overflow | NA | Not Applicable |
| 1.7.14.2 |  | | | Testing for Stack overflow | NA | Not Applicable |
| 1.7.14.3 |  | | | Testing for Format string | Yes | Tested Not Vulnerable |
| 1.7.15 | OTG-INPVAL-015 | | | Testing for incubated vulnerabilities | Yes | Tested Not Vulnerable |
| 1.7.16 | OTG-INPVAL-016 | | | Testing for HTTP Splitting/Smuggling | Yes | Tested Not Vulnerable |
| 1.8 | **Error Handling** | | | | | |
| 1.8.1 | OTG-ERR-001 | | | Analysis of Error Codes | Yes | Tested Not Vulnerable |
| 1.8.2 | OTG-ERR-002 | | | Analysis of Stack Traces | Yes | Tested Not Vulnerable |
| 1.9 | **Cryptography** | | | | | |
| 1.9.1 | OTG-CRYPST-001 | | | Testing for Weak SSL/TSL Ciphers, Insufficient Transport Layer Protection | No | Refer the vulnerability reported in 2.2 |
| 1.9.2 | OTG-CRYPST-002 | | | Testing for Padding Oracle | Yes | Tested Not Vulnerable |
| 1.9.3 | OTG-CRYPST-003 | | | Testing for Sensitive information sent via unencrypted channels | Yes | Tested Not Vulnerable. |
| 1.1 | **Business Logic Testing** | | | | | |
| 1.10.1 | OTG-BUSLOGIC-001 | | Test Business Logic Data Validation | | Yes | Tested Not Vulnerable |
| 1.10.2 | OTG-BUSLOGIC-002 | | Test Ability to Forge Requests | | Yes | Tested Not Vulnerable |
| 1.10.3 | OTG-BUSLOGIC-003 | | Test Integrity Checks | | Yes | Tested Not Vulnerable |
| 1.10.4 | OTG-BUSLOGIC-004 | | Test for Process Timing | | NA | Not Applicable |
| 1.10.5 | OTG-BUSLOGIC-005 | | Test Number of Times a Function Can be Used Limits | | Yes | Tested Not Vulnerable |
| 1.10.6 | OTG-BUSLOGIC-006 | | Testing for the Circumvention of Work Flows | | Yes | Tested Not Vulnerable |
| 1.10.7 | OTG-BUSLOGIC-007 | | Test Defenses Against Application Mis-use | | Yes | Tested Not Vulnerable |
| 1.10.8 | OTG-BUSLOGIC-008 | | Test Upload of Unexpected File Types | | NA | Not Applicable |
| 1.10.9 | OTG-BUSLOGIC-009 | | Test Upload of Malicious Files | | NA | Not Applicable |
| 1.11 | **Client Side Testing** | | | | | |
| 1.11.1 | OTG-CLIENT-001 | | Testing for DOM based Cross Site Scripting | | No | Tested Not Vulnerable. |
| 1.11.2 | OTG-CLIENT-002 | | Testing for JavaScript Execution | | No | Tested Not Vulnerable. |
| 1.11.3 | OTG-CLIENT-003 | | Testing for HTML Injection | | Yes | Tested Not Vulnerable |
| 1.11.4 | OTG-CLIENT-004 | | Testing for Client Side URL Redirect | | Yes | Tested Not Vulnerable |
| 1.11.5 | OTG-CLIENT-005 | | Testing for CSS Injection | | Yes | Tested Not Vulnerable |
| 1.11.6 | OTG-CLIENT-006 | | Testing for Client Side Resource Manipulation | | Yes | Tested Not Vulnerable |
| 1.11.7 | OTG-CLIENT-007 | | Test Cross Origin Resource Sharing | | Yes | Tested Not Vulnerable |
| 1.11.8 | OTG-CLIENT-008 | | Testing for Cross Site Flashing | | NA | Not Applicable |
| 1.11.9 | OTG-CLIENT-009 | | Testing for Click jacking | | Yes | Tested , Vulnerable |
| 1.11.10 | OTG-CLIENT-010 | | Testing Web Sockets | | NA | Technology not in use |
| 1.11.11 | OTG-CLIENT-011 | | Test Web Messaging | | NA | Technology not in use |
| 1.11.12 | OTG-CLIENT-012 | | Test Local Storage | | Yes | Tested Not Vulnerable |

## Scanned Items

https://tptuat.aponline.gov.in/pollutioncb/

https://tptuat.aponline.gov.in/pollutioncb/a\_ambient\_air\_quality\_data\_ap.html

https://tptuat.aponline.gov.in/pollutioncb/a\_ambient\_air\_quality\_monitoring\_functions.html

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https://tptuat.aponline.gov.in/pollutioncb/a\_water\_cess.html

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https://tptuat.aponline.gov.in/pollutioncb/consent\_management\_consent\_for\_establishment\_categories\_of\_industries\_3.htm

https://tptuat.aponline.gov.in/pollutioncb/consent\_management\_consent\_for\_establishment\_cfe\_committee\_meetings.htm

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## Limitations

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