



**POST-IMPLEMENTATION BENEFITS I.T. STUDY**

**OF THE**

**STATISTICS DEPARTMENT OF MONTSERRAT**  
**CARIBBEAN TOURISM ORGANIZATION -**  
**MANAGEMENT INFORMATION SYSTEM FOR TOURISM**



**2000 – 2019**

Office of the Auditor General  
September 2020

**CARIBBEAN TOURISM  
ORGANIZATION -  
MANAGEMENT INFORMATION  
SYSTEM FOR TOURISM**

This is a Report of a Post-  
Implementation Benefits I.T.  
Study conducted by the Office of  
the Auditor General

Florence A. Lee  
Auditor-General  
Office of the Auditor General  
September 2020

## **PREAMBLE**

### **Vision Statement**

To be a proactive Supreme Audit Institution that helps the nation make good use of its resources

### **Mission Statement**

The OAG is the national authority on public sector auditing issues and is focused on assessing performance and promoting accountability, transparency and improved stewardship in managing public resources by conducting independent and objective reviews of the accounts and operations of central government and statutory agencies; providing advice; and submitting timely Reports to Accounting Officers and the Legislative Assembly

### **The Goal**

To promote staff development, enhance productivity, and maintain a high standard of auditing and accounting in the public sector, thereby contributing to the general efficiency and effectiveness of public finance management



## AUDITOR GENERAL'S OVERVIEW

As technology advances, the Government of Montserrat's (GoM) Ministries and Departments have become increasingly dependent on computerized information systems to carry out their operations to process, maintain, and report essential information. In 2001, a Management Information System for Tourism was acquired to facilitate Montserrat's tourism statistical data to collect and process a wide range of tourism information.

Our review revealed that the Statistics Department has benefitted significantly from the implementation of the Caribbean Tourism Organisation - Management Information System for Tourism. Over the years, the software has been upgraded to reflect the changing requirements of the Department. However, we found that temporary workers are being utilized to input data into the system; this affects the timely input and analysis of data. Therefore, it is our recommendation that the Data Entry Clerk be regularized as a position within the Statistics Department.

We have highlighted other findings and the acceptable and implementation of our recommendations will improve the management of the system.

We wish to record our thanks to all who provided information, clarifications, or courtesies extended during the course of this review.



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23 September 2020

## ABBREVIATIONS

CRSTDP	Caribbean Regional Sustainable Tourism Programme
CSO	Central Statistics Office
CTO	Caribbean Tourism Organisation
DITES	Department of Information Technology and e-Services
DOB	Date of Birth
E/D	Embarkation and Disembarkation
EU	European Union
GISU	Government Information Systems Unit
HYPE	Helping Youth Prepare for Employment
ISSAI	International Standard of Supreme Audit Institutions
ISAE	International Standard on Assurance Engagements
MIS	Management Information Systems
MIST	Management Information System for Tourism
MTB	Montserrat Tourist Board
MTD	Montserrat Tourism Division
MYACSS	Ministry Of Youth Affairs Community Services And Sports
OAG	Office of the Auditor General
OECS	Organisation of Eastern Caribbean States
OTRCIS	Overseas Territories Regional Criminal Intelligence System
POB	Place of Birth
SDM	Statistics Department Montserrat
SQL	Structured Query Language
TIMS	Tourism Information Management System

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## EXECUTIVE SUMMARY

### Overview

1. The Caribbean Tourism Organisation's developed a software solution - Management Information System for Tourism (MIST) circa 1998, to aid in the fulfilment of their vision to provide to, and through its members, services, and information essential for the development of sustainable tourism for the economic and social benefit of the various Caribbean destinations.
2. The former Montserrat Tourist Board and Central Statistics Office acquired the MIST software in 2001, to facilitate the accurate and efficient collection, processing, compilation, analysis, interpretation, and dissemination of Montserrat's Tourism statistical data.

### Key Observations & Findings

3. **Overall achievement.** The CTO-MIST software was found to be uncomplicated, efficient, and secure with robust Information Security and Application Controls, Business Continuity practices, and IT Operations provisioning in place.
4. **Objectives and benefits of CTO-MIST were achieved.** Although the current version of the CTO-MIST software is very outdated, it still met the Statistics Department of Montserrat's (SDM) work objectives of ensuring the accurate and efficient collection, processing, compilation, analysis, interpretation, and dissemination of Montserrat's tourism statistical data. The SDM is in the process of upgrading from MIST 2006 to the online version, Tourism Information Management System.
5. **Change in approach and instability.** Initially, the MTB was responsible for the collection and input of tourism data taken from the embarkation/disembarkation cards; and the unit's Data Entry Clerks were being sent to understudy and enter data at the SDM's office, until the last clerk left the organisation. This resulted in a backlog of gathering the tourism statistical data, when the SDM assumed full responsibility of the job function. Subsequently, the SMD has only hired provisional staff through the Ministry of Youth Affairs Community Services and Sports' apprenticeship program, Helping Youth Prepare for Employment or the GoM's Human Resources Management Unit (HRMU). This continual short-term arrangement has the potential to negatively affect the level of productivity and accuracy of the Statistical data.

### Recommendations

6. **Regularising Data Entry Clerk Post.** Efforts should be made by the SDM to make a formal request to the HRMU for the Data Entry Clerk post to be regularised. This will ensure stability, consistency, and timely completion of assigned tasks.



## Audit Conclusion

7. The Office of the Auditor General has determined that the CTO-MIST software is uncomplicated, adequately secure and robust. Although the software is very outdated, the Montserrat Statistics Department's work objectives were met; and it delivered the anticipated benefits of collecting; combining; disseminating accurate information; managing and generating reports; and monitoring, analysing, and detecting changes in seasonality, in a timely and efficient manner.
8. The upgrade to the online version, Tourism Information Management System (TIMS), is anticipated to improve on the CTO-MIST utilities. This online edition is anticipated to further enhance the department's capability to monitor, realise, detect changes, and generate accurate reports pertaining to seasonality.

## CHAPTER 1 INTRODUCTION

### Background

1.1 The Caribbean Tourism Organisation's (CTO) vision is to provide to, and through its members, the services and information necessary for the development of sustainable tourism for the economic and social benefit of the Caribbean people. As a result, they developed a software solution called Management Information System for Tourism (MIST), around 1998, for the improvement of the tourism data gathering process in the various tourism sectors.<sup>1</sup>

1.2 The former Montserrat Tourist Board (MTB) and Central Statistics Office (CSO) approached the CTO about acquiring MIST in 2000/2001, to facilitate the accurate and efficient collection, processing, compilation, analysis, interpretation, and dissemination of Montserrat's Tourism statistical data.

### Management Responsibility

1.3 Management is responsible for ensuring that the CTO-MIST project objectives are achieved. More specifically, management must ensure that the project output is beneficial to the users of CTO-MIST software.

### Auditor's Responsibility

1.4 Our responsibility is to independently express a conclusion on the Post-Implementation Benefits audit of the Statistics Department of Montserrat's CTO-MIST software, based on our audit. Our work was conducted in accordance with International Standards of Supreme Audit Institutions (ISSAI) 100 and International Standard on Assurance Engagements (ISAE) 3000. These principles require that we comply with ethical requirements and plan and perform the audit in order to obtain reasonable assurance whether tried and true policies, plans, procedures, and internal controls exist and are functioning effectively, proper records have been and are being kept, and all the necessary information and explanations for the purpose of our audit, has been obtained.

### Audit Mandate

1.5 The Office of the Auditor General (OAG) is mandated through the Montserrat Constitution Order 2010 to perform the audit. This mandate is supported by International Standards of Supreme Audit Institutions (ISSAI) 1, 200, 300, 400, and strengthened by the Public Finance Management and Accountability Act (PFMAA) 2008 and the Public Finance Management and Accountability Regulations (PFMAR) 2009.

### Audit Standards and Guidelines

1.6 The standards and guidelines used to assess the CTO-MIST software included the use of International Standards of Supreme Audit Institutions (ISSAI) 3100, 4100, and 5300.

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<sup>1</sup> <https://www.onecaribbean.org/about-cto/>

## **Audit Objectives**

1.7 The aims of this Post-Implementation Benefits review were to:

- (A) Determine if the implementation of the CTO-MIST software met the Statistics Department's work objectives and delivered the anticipated benefits.
- (B) Establish if any improvements were made to the CTO-MIST software since it was implemented.
- (C) Establish if there are any plans for future enhancements to CTO-MIST.

## **Audit Scope and Methodology**

1.8 The study mostly covered the period November 2000 - November 2019, and focused on the examination of the Post-Implementation Benefits of the CTO-MIST software. The Auditors monitored the audit in the field and may have amended any area of the audit scope in consultation with the Auditor General, so as to maximize the efficiency of the audit.

1.9 A combination of techniques were utilised to gather information and validate the beneficial achievements for implementing the CTO-MIST software. These included, but were not limited to, interviewing past and present key stakeholder(s) at the Statistics Department of Montserrat, and Montserrat Tourism Division, inspection of documents; and observation of the software; in order to gather in-depth information about CTO-MIST.

1.10 The findings of this study were discussed with the Head of the Statistics Department and Chief Statistician, and their comments were taken into consideration when finalising the report.

## CHAPTER 2 STATISTICS DEPARTMENT OF MONTSERRAT

2.1 The Statistics Department of Montserrat (SDM) was unable to provide much historical information; however, the general consensus from past and present employees is that the unit was probably established circa 1960's/1970's.

### Mission Statement

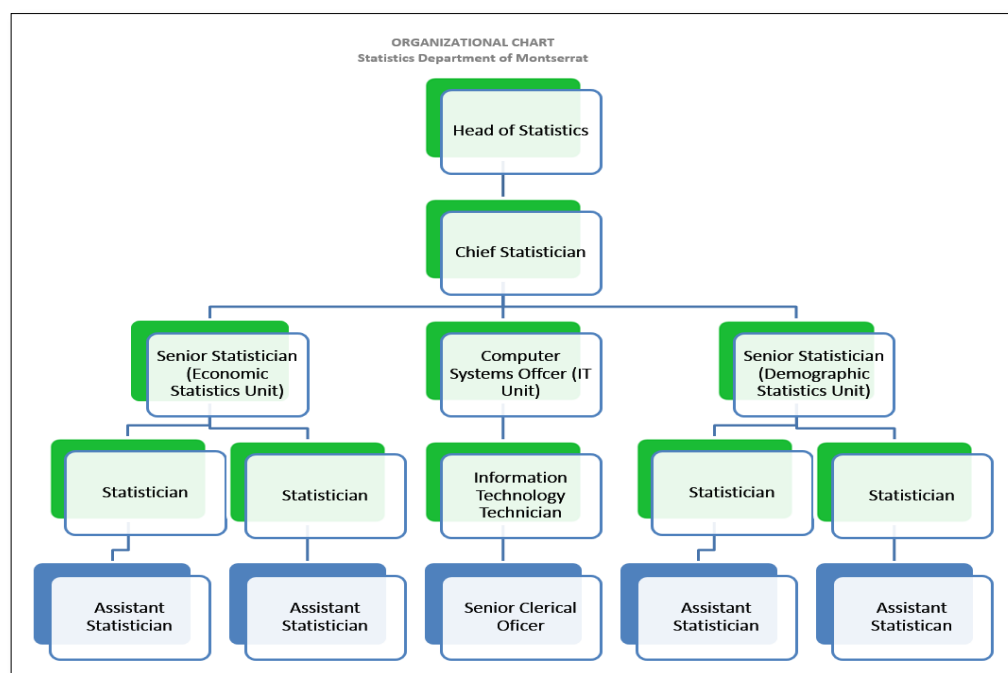
2.2 The SDM's mission is to collect, process, compile, analyse, interpret, and disseminate, statistical data for the use of the Public and Private sectors of Montserrat and for Regional and International organisations. The department works as a team to produce timely, reliable, and relevant official statistics that are internationally comparable.<sup>2</sup>

### Legal Framework

2.3 The Statistics Department is mandated by the CAP 6.02 Statistics Act, and the use of the CTO-MIST software also falls under the remit of this legal framework to, "...collect, compile, analyse, abstract and publish statistical information relating to the social, agricultural, mining, commercial, industrial, economic and general activities and conditions of the inhabitants of Montserrat..."

### Organisational Chart

2.4 The SDM's Organisational Chart illustrates fifteen (15) full-time job positions in the department. However, at the time of the audit there were only nine (9) full-time staff and four (4) temporary employees on contract.



<sup>2</sup> <http://statsdmt.com/about/>

## CHAPTER 3 CARIBBEAN TOURISM ORGANIZATION - MANAGEMENT INFORMATION SYSTEMS FOR TOURISM

### Caribbean Tourism Organisation

3.1 <sup>3,4,5,6</sup> The Caribbean Tourism Organisation (CTO) was established in 1989 with the aim of being an organised body to focus on the entire region of the Caribbean as a single destination entity. The CTO is comprised of Government and Private Sector operatives in tourism; members include destination countries and private companies involved in providing holidays to the region, such as airlines, hotels, cruise operators, and travel agencies. The organisation provides, through its members and services, information necessary for the development of sustainable tourism for the economic and social benefit of the Caribbean nations.

3.2 CTO is funded by fees paid by participating countries; these monies cover membership and contribute towards a Regional Marketing Fund (RMF). Each country's payment is based on a tourism arrivals formula.

3.3 Around January 1999, CTO developed a software known CTO-MIST (Management Information System for Tourism), which was funded by the European Union (EU) project. Target audiences of the software are mainly tourism planners in Tourism Industry and Statistical personnel.

### What is CTO - Management Information System for Tourism?

3.4 CTO-MIST is comprehensive software consisting of integrated suite of database programs such as SQL and Microsoft Access. The application was specifically designed to collect, hold, and process a wide range of tourism data in order to develop both a national and regional integrated Management Information System (MIS), for tourist destinations in the Caribbean. The application consist of three main elements:

- **Performance** - Database of Arrival/Departure statistics, Annual Economic Indicators, etc.;
- **Product Inventory** - Database of tourism facilities i.e. accommodation, cruise, carriers, attractions, etc. and destination information; and
- **Marketing** - Database of Source Market Information and Marketing Intelligence

3.5 MIST was designed to run on stand-alone Personal Computers (PCs), or on a network; it is customisable (within certain limits) and is continually being enhanced in order to fulfil any new requirements that arise, nationally and regionally. Access to the data entered into the system is instantaneous, and CTO-MIST has a very proficient reporting structure and capabilities, for generating reports to be used by the various sectors and operators. For example, national performances and indicators; provide immediate information to aid planning, research and activity monitoring; and development; respectively.

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<sup>3</sup> <https://www.onecaribbean.org/about-cto/>

<sup>4</sup> *From Measurement to Management - Indicators of Sustainable Tourism Development in the Caribbean and the CTO MIST, Paper presented by Ms. Gail Clarke, Market Research Specialist*

<sup>5</sup> *Introducing CTOMIST*

<sup>6</sup> <https://www.totallybarbados.com/articles/tourism/caribbean-tourism-organization-cto/#.XbhQE1VKiUk>

3.6 The customisation, operating characteristics, and security levels features of CTOMIST, permits the software to place specific up-to-date information where it is required and when it is required on the user's PC, whether that user is a data input or information officer at the airport, a tourism planner at a ministry, a marketing manager in an overseas office, or presenting the product for a customer in a travel agency or via access over the Internet.

## **CHAPTER 4      MANAGEMENT INFORMATION SYSTEM FOR TOURISM PROJECTS SUMMARY**

### **MIST2000 Software**

#### **Project Summary**

4.1      The former Montserrat Tourist Board (MTB), were the first to express an interest to the Barbados-based CTO about attaining the CTO-MIST software in October 2000; and former Central Statistics Office (CSO), followed suit in March 2001. At the time, the collation of the Tourism statistical information involved the Statistics Office collecting all Embarkation/Disembarkation (E/D) cards from the Immigration Department, and entering the information into Microsoft Access Database by the department.

4.2      Before their inaugural trip to Montserrat, the CTO conducted a preliminary analysis of all the components involved in the collection and processing of Montserrat's tourism statistical data.

#### **Project Schedule**

4.3      The initial installation activities took place in April 2001 at both the CSO and MTB; there was a follow-up visit in November 2001.<sup>7</sup>

#### **Planned Project Deliverables**

4.4      The initial planned project deliverables for the installation of CTO-MIST 2000, involved the following:

- (1)      Delivery of a presentation about the MIST 2000 software (i.e. Marketing, Performance, and Inventory modules) to CSO, MTB, and any other interested stakeholders in Tourism.
- (2)      Install MIST at the CSO's office to enable the staff to utilise a test environment of the system, for processing preliminary data (i.e. Arrival/Departure stats).
- (3)      Conduct an initial feasibility review for the full installation of the system and confirm the time-table for the installation.
- (4)      Once there was an interest, they would conduct a brief presentation on the progress of the new CTO website, Global Gateways.

4.5      In addition, the purpose of the second visit in November was to upgrade the previously installed MS Access version of the MIST2000 system, with the latest SQL version; conduct data input, reporting, and awareness training; and to go "live" with the system.

#### **Project Cost**

4.6      The CTO-MIST software was free of charge as it was a European Union (EU) funded project via the Caribbean Regional Sustainable Tourism Programme (CRSTDP).

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<sup>7</sup> *Report on the CTO-MIST Mission to Montserrat 21<sup>st</sup> - 24<sup>th</sup> November 2001, Stephen Aymes and Paul Ridoutt*

## MIST2006 Software

### Project Summary

4.7 As per CTO's I.T. Technical Support report submitted in July 2005, the MIST 2000 version of the software was becoming problematic for the users in Montserrat. Evidence indicated that CTO's I.T. Technical Support staff commenced emailing solutions to the CSO Counterpart as early as 2002, and recurrent troubleshooting trips to the island, from 2005. This was the general trend until March 2010 when a firm decision was made by the then Director of Statistics, to advance to the MIST 2006 version.

4.8 CTO conducted a scoping visit in August 2008 to determine Montserrat's requirements and returned in March 2011, with the purpose of installing and configuring MIST 2006.

### Planned Project Deliverables

4.9 As per the MIST2006 documentation<sup>8</sup>, the process and programme for implementing the system was to be as follows:

- A. **Scoping visit** - to demonstrate MIST, establish existing hardware and software, establish training requirements, and to discuss the operational options (scanning, central processing, centralised or decentralised data input and report generation, report requirements etc.) Meet with Tourism, Central Statistics, and Immigration departments, to determine their needs and to discuss current and future Immigration cards as an aid to Information Management; and to also plan and agree implementation dates etc.
- B. Carry out any required customisation of the MIST2006 software in Barbados, to meet the island's national needs as agreed upon during the Scoping visit.
- C. **Installation visit** - Install and test the MIST2006 software, and train all levels of users.
- D. **Stabilisation visit** - This visit usually occurred approximately 3 months after the system was installed and functioning without any glitches. It was the final implementation visit to review and upgrade the system, as follows:
  - Upgrade the Database structures including tables, views and control data
  - Upgrade the Application Software
  - Update Report models if necessary – Standard, Report Builder and Cube
  - Update the CRM Module if necessary
  - Discuss and agree on the ongoing support and Maintenance Contract.

### Project Schedule

4.10 The planned MIST 2006 installation programme was to take place on 21<sup>st</sup> – 25<sup>th</sup> March 2011.

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<sup>8</sup> CTO MIST2006 Montserrat MIST Installation Visit and Handover Report, March 21<sup>st</sup> - 25<sup>th</sup> 2011



**Project Cost**

4.11 The MIST 2006 project was an EU-funded Caribbean Regional Sustainable Tourism Programme (CRSTDP) venture; therefore the upgrade installation and implementation was free of cost.

## CHAPTER 5 OBSERVATIONS

### Observations

**5.1 MIST 2000 Project.** As per CTO's November 2001 report,<sup>9</sup> the following initial project-related activities took place in April 2001:

- The MIST 2000 software was installed on MTB's server and 3 of their PCs, and on the CSO's server and 6 PCs.
- The MTB had intentions of being connected to the Government's centralised network and to benefit from the services of their IT staff; but they never did.
- The Performance, Data Entry, and Reports Modules were all customised to the National requirements of Montserrat, and the Accommodation Module was partially entered on the Inventory database.
- Training sessions were conducted with MTB, CSO, and Government IT staff, in a test environment. A hard copy and CD of the User Manual was provided, along with additional Demo training, security passwords, and so forth.
- CSO was elected to be responsible for the input of the data into the MIST 2000 test environment and to oversee the Performance database.
- A member of MTB's staff was appointed to be the "CTO-MIST Manager/Counterpart", for the project and an internal System Manager (could be one or more persons).

**5.2 Network Infrastructure and Technical Support.** The MTB did not have the proper network infrastructure to support MIST system. Therefore, CTO had recommended that the unit consider joining forces with the GoM's centralised network in order to facilitate the interchange of data between them and CSO. They also recommended that the Tourist Board seek IT Support from either DITES; or the services of an external contractor. MTB chose not to join forces with DITES; they instead opted to maintain their own server

**5.3 Faults.** Once faults were identified by Montserrat's CTO-MIST users, they were required to report them to the nominated internal System Manager who would log and verify the nature of each fault. If the fault was a 'bug' in the software, the System Manager was supposed to email a Fault/Error Log form to CTO, stating the: (i) error description; (ii) error message displayed; (iii) nature of the fault (iv) date; (v) number of occasions the fault occurred; (vi) any corrective action taken; (vii) any details which led to the fault occurring; etc. All CTO-MIST faults were to be investigated by the internal System Manager and if they could not be resolved locally, the issue was to be reported immediately to CTO's IT Technical personnel. System Change Requests followed the same procedures as Fault/Error logging; however it is not known, and there is no evidence, of Montserrat's nominated System Manager ever employing these procedures.

**5.4 Post-installation MIST 2000 Issues.** CSO experienced a few issues with this version, which were speedily resolved by CTO's Tech Support via updates to files, and the database (data and structure). Some of the problems encountered included:

- MIST operating differently on some computers and for different users

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<sup>9</sup> *Report on the CTO-MIST Mission to Montserrat 21<sup>st</sup> - 24<sup>th</sup> November 2001, Stephen Aymes and Paul Ridoutt*

- Deleted error messages being displayed
- Data entry screen flickering
- Reports functionality was not working
- Reports not found error messages
- Discrepancies with reports
- Records could not be access
- Lock messages from multi-users accessing application
- Other issues that occurred were discrepancies in totals

**5.5 MIST 2006 Installation issues.** The CTO team reported that they encountered delays, which had a negative impact on the scheduled installation programme. Key resource persons were unavailable at critical times; there were no IT support personnel on hand to grant Administrative access to the computers at CSO, and that the main IT counterpart from the Central IT Department (DITES) was unavailable on the first scheduled installation day until late in the afternoon. Therefore, the installation and configuration of SQL Server had to be postponed.

**5.6** Secondly, not all of the required SQL Server components were pre-installed on the server as agreed upon during the 2008 scoping visit; in addition, the original installation media could not be found. Consequently, valuable time was misspent downloading the required software. Compatibility issues arose, as well as other problems caused by human error when the databases and reports were being loaded.

**5.7** Despite the delays, the CTO Installation Team installed MIST 2006 as planned; the system was fully tested in conjunction with the Statistician and all functionality was tested, that is, installation, set up, data input, import/export, and reporting, prior to the system being handed over.

**5.8 Service Provider Maintenance Contract.** Originally a Maintenance Contract was to be supplied by an external technical service provider for 24/7 service on-line maintenance. Montserrat was given 2 annual retainer fee options to choose from: (i) US\$3,500 for 50 hours of maintenance per year or (ii) US\$1,750 for 24 hours of maintenance; including an option for on-site attendance; or extra time at additional costs.

**5.9 CTO-MIST Data Collection and Processing.** At the end of every month, the Stats Cadet (temp staff) collects all of the passengers E/D cards from Immigration Department at the various ports of entry. The Immigration Dept. also provides SDM with an Excel spreadsheet of passengers Arrivals/Departure information, from their intelligence-gathering software called OTRCIS. The Stats Cadet duplicates and imports a copy of the OTRCIS report into Access database, and prints a blank data entry sheet before the E/D data is entered into CTO-MIST. Another document called the Data Entry Summary sheet is used by the Data Entry Clerk for tallying and cross-referencing the total number of physical E/D cards, against the total number of Arrivals into Montserrat recorded by Immigration in OTRCIS.

**5.10** Once a discrepancy is found (for example, an E/D card was missing or the OTRCIS totals are greater or less than the E/D card count), SDM will update the information in their records and inform the Immigration Dept. about the error.

Year 2018	General Instructions							
Month October	General Instructions							
Data Entry Clerk	General Instructions							
Checked by	General Instructions							
Date Checked	General Instructions							
Date of Arrival	MANUAL COUNT (SEA)	IMMIGRATION (SEA)	ACTUAL DATABASE (SEA)	SEA COMMENTS	MANUAL COUNT (AIR)	IMMIGRATION (AIR)	ACTUAL DATABASE (AIR)	AIR COMMENTS
Monday, October 01, 2018				OK		13	13	OK
Tuesday, October 02, 2018				OK		12	12	OK
Wednesday, October 03, 2018				OK		10	10	OK
Thursday, October 04, 2018				OK		12	12	OK
Friday, October 05, 2018				OK		14	14	OK
Saturday, October 06, 2018				OK		15	15	OK
Sunday, October 07, 2018				OK		10	10	OK
Monday, October 08, 2018				OK		11	11	OK
Tuesday, October 09, 2018				OK		22	22	OK
Wednesday, October 10, 2018				OK		20	20	OK
Thursday, October 11, 2018				OK		5	5	OK
Friday, October 12, 2018				OK		14	13	Please Recount
Saturday, October 13, 2018				OK		16	16	OK
Sunday, October 14, 2018				OK		7	7	OK
Monday, October 15, 2018				OK		12	13	Please Recount
Tuesday, October 16, 2018				OK		22	22	OK

Figure 1 - Sample Data Entry Sheet

5.11 After the Data Entry Clerk logs into MIST with their username and password, a dialog box enter appears to enter the information from the ED card in batch format for a specific Month and Year.

Figure 2 - MIST Current Database Dialogue Box for CSO Data Batch Entry

5.12 After the dialogue box closes, the Data Entry Clerk inputs the data into the E/D Card Data Entry - Add Batch form; the information extracted from the E/D cards adheres to a strict format, whether the Port of Entry is by air or sea as follows:

- Date of Entry
- Port of Entry (Air/Sea)
- DOB (Date of Birth)
- Gender
- Occupation
- POB – Place of Birth
- Residence

- Accommodation
- Length of Stay
- Purpose of Visit

Figure 3 - E/D Cards Data Entry Form

5.13 Once the extracted data is entered into the E/D cards Data Entry Form, it automatically filters into the Montserrat CSO Data Entry Batch List, form. This information is automatically generated into an SDM Excel Pivot Table Spreadsheet, which would be use for the Phase 2 cross-checking.

Batch #	ED Card #	Passport #	Date of Arrival	Arrival Flight	Date of Depa	Departure Fli	Surname	First Name	Middle Name	DOB	Data Entry Ty
0000010057	149811		01/10/2019	809	1/1					25/06/1956	Arrivals

Figure 4 - Montserrat CSO Data Entry Batch List

5.14 **Cross-Checking.** After all the data is inputted in the system, checks are performed on the data to verify the accuracy of the information as follows:

- Phase 1 - The total of arrivals for each day from OTRCIS Excel spreadsheet is cross-checked against the CSO Data Entry Day Batch information using the Date of Birth (DOB) variable. The spreadsheet uses conditional (TRUE/FALSE) formula to detect errors; if FALSE results are listed this means that either the DOB is incorrect due to human error; or E/D cards are missing from the batch; or Arrival information was not entered into OTRCIS by the Immigration Dept. To resolve these issues the data entry clerk rechecks the E/D cards to ensure that the total received from the points of entry tally back to number of

2019 DOB CHECK\_MMML\_DATABASE - Excel

File Home Insert Page Layout Formulas Data Review View Foxit PDF Tell me what you want to do...

Clipboard Font Alignment Number Styles Cells

M1 October 30th 2019

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	October 12th 2019				October 15th 2019				October 25th 2019				October 30th 2019		
2															
3		Immdob:				Immdob:				Immdob:				Immdob:	
4	6/11/1935	6/11/1935	TRUE		6/21/1955	6/21/1955	TRUE			3/22/1944	FALSE			2/10/1944	FALSE
5	5/16/1953	5/16/1953	TRUE		12/26/1960	12/26/1960	TRUE		3/12/1946	5/12/1946	FALSE		2/27/1945	2/27/1945	TRUE
6	11/30/1958	11/30/1958	TRUE		7/13/1961	7/13/1961	TRUE		11/29/1950	11/29/1950	TRUE		1/15/1946	1/15/1946	TRUE
7	2/22/1959	2/22/1959	TRUE		8/25/1961	8/25/1961	TRUE		5/30/1952	5/30/1952	TRUE		2/10/1946	2/10/1948	FALSE
8	9/20/1963	9/20/1963	TRUE		10/17/1966	10/17/1966	TRUE		7/24/1956	7/24/1956	TRUE		2/10/1948	2/10/1948	FALSE
9	4/2/1966	4/2/1966	TRUE		3/24/1974	3/24/1974	TRUE		10/21/1965	10/21/1965	TRUE		6/6/1948	6/6/1948	TRUE
10	2/1/1969	2/1/1969	TRUE		6/24/1978	6/24/1978	TRUE		3/16/1970	3/16/1970	TRUE		7/5/1948	7/5/1948	TRUE
11	6/7/1969		FALSE		4/19/1981	4/19/1981	TRUE			10/22/1972	FALSE		4/21/1950	4/21/1950	TRUE
12	8/13/1972	8/13/1972	TRUE		10/21/1984	10/22/1984	FALSE			4/14/1973	FALSE		10/16/1951	10/16/1951	TRUE
13	3/9/1975	3/9/1975	TRUE		5/10/1991	5/10/1991	TRUE		9/25/1977	9/25/1977	TRUE		11/14/1952	11/14/1952	TRUE
14	8/25/1978	8/25/1978	TRUE		3/8/1994	3/18/1994	FALSE		8/5/1983	8/5/1983	TRUE		2/5/1954	2/5/1954	TRUE
15	3/29/1985	3/29/1985	TRUE		10/14/1996	10/14/1996	TRUE		5/27/1984	5/27/1984	TRUE			12/2/1954	FALSE
16		3/17/1988	FALSE		9/4/2001		FALSE		6/12/1984	6/12/1984	TRUE		8/10/1957	8/10/1957	TRUE
17		8/7/1989	FALSE						6/7/1987	6/7/1987	TRUE		1/20/1959	1/20/1959	TRUE
18	11/8/1991	11/8/1991	TRUE						10/22/2010		FALSE		9/4/1960	9/4/1960	TRUE
19													10/7/1960	10/7/1960	TRUE
20													10/6/1963	10/6/1963	TRUE
21													2/14/1964	2/14/1964	TRUE
22													3/12/1964	3/12/1964	TRUE
23															TRUE

Ready Circular References

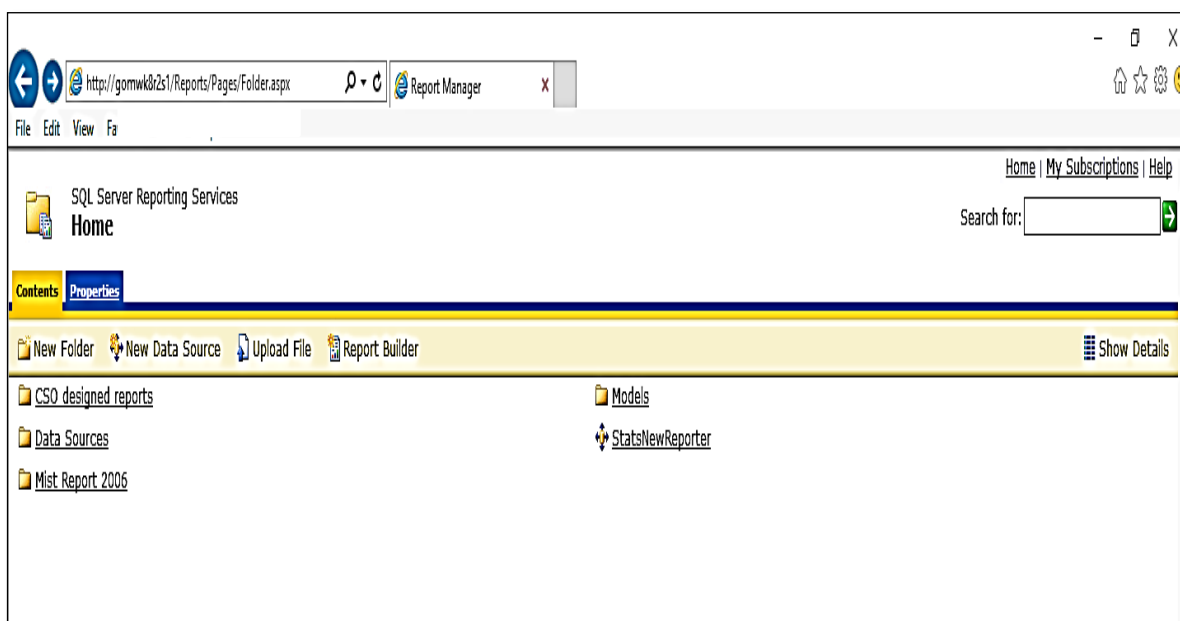
Average: 7/17/1964 Count: 83 Sum: 1/5/321

- Phase 2 - This stage entails the Montserrat Tourism data undergoing further scrutiny by the Chief Statistician for any discrepancies. The data in the CTO-MIST Excel Pivot Table is retrieved from the SDM server housed at DITES and a comparison is carried out with the OTRCIS information against the data brought up in the Pivot Table. If errors are found they are noted and forwarded to the Data Entry clerk to resolve; and depending on the discrepancies found, the Chief Statistician will contact the Immigration Dept. to verify the accuracy of their data.

- Visitor Arrivals
- Tourist Arrivals by Age Group and Sex
- Tourist Arrival by Place of Stay

- Tourist Arrivals by Purpose of Visit
- Length of Stay (Average)
- Tourist Arrival by Market (USA, Europe, Caribbean, etc.)
- Tourist Arrivals by Month

5.16 The data is automatically calculated by formulas; but if errors are detected the Assistant Statistician will manually re-calculate the figures to verify the totals.



*Figure 6 - Webpage Access to SQL Reporting Module*

5.17 These Economic reports are disseminated by the tenth (10<sup>th</sup>) of each month, to local and regional stakeholders such as MTD, Economic Unit (Ministry of Finance), Radio Montserrat, ECCB, CTO, and the OECS. The CTO aggregates all of the data submitted by the participating Caribbean member states into one consolidated report, and sends copies back for each country to verify that the data was not misrepresented.

5.18 **CTO Membership Subscription & Fees.** Montserrat's CTO membership subscription and fees are paid through the Ministry of Finance.



## CHAPTER 6 OBSERVATIONS, FINDINGS & RECOMMENDATIONS

### Observations

6.1 **CTO-MIST attributes.** Although the version of CTO-MIST in use is very outmoded, it is effective, is secure and has robust adequate IT Security and Applications Controls, and Business Continuity practices, including reliable IT Operations provisioning in place.

6.2 **Pivot Table issues.** On occasion, due to either network connectivity issues or glitches in the outmoded CTO-MIST source code, SDM staffs are unable to access the data in the Excel spreadsheet pivot tables. Consequently, they have to retrieve a backup copy from the H: drive and rebuild the pivot table.

6.3 **Help Desk Support.** The CTO Help Desk services still provides support whenever minor technical issues arose in the outmoded MIST 2006 version of the software.

### Findings

6.4 **Change in Responsibility for Data Entry.** Originally, the CTO-MIST project was to be a joint venture between the former MTB and CSO bodies in November 2000; it was agreed that Tourist Board was to be responsible for the collection and input of Tourism information from the E/D cards, and the Statistics Department would be responsible for the analysis and dissemination of the processed data. However from all reports, the Tourist Board did not have the required infrastructure; that is, technical support and maintenance for the server and MIST software. As a result, the Statistics Department took over the responsibility for the gathering and entering of tourism information into CTO-MIST.

6.5 However, Data Entry Clerks on the MTD's payroll were still being sent to understudy and perform data entry at the Statistics Department's office, until the last clerk left three (3) years ago. This resulted in a backlog of gathering the tourism statistical data, until the SDM resorted to hiring provisional workers from either the Ministry Of Youth Affairs Community Services and Sports' (MYACSS) Helping Youth Prepare for Employment (HYPE) programme, or through the Human Resources Management Unit (HRMU). This short-term arrangement can negatively affect the level of productivity and also accuracy of statistical data with the constant staff changes.

### Recommendations

6.6 **Regularising Data Entry Clerk post.** Efforts should be made by the SDM to make a formal request to HRMU for the Data Entry Clerk post to be regularised. This will ensure stability and consistency and ensure timely completion of assigned tasks.



## CHAPTER 7 FUTURE INITIATIVES

7.1 <sup>10</sup>The Statistics Department of Montserrat and CTO are currently in consultation to upgrade to the latest version of the software, known as CTO-TIMS (Tourism Information Management System). This new version is a fully functional online application, which meets the requirements for timely and easily accessible data; it captures Arrivals and Departure information from E/D cards. The process of capturing this information involves the manual data entry of information captured on the E/D cards. Some of the technological advancements in both hardware and software were employed to improve the functions, management, and maintenance of the application. The software is hosted in a secured server at CTO's headquarters in Barbados and made accessible to authorised users identified by destination for the purpose of entering data and generation of reports.

7.2 The Business Reporting features include the new PowerBI, which illustrates the data in a more visually and understandable way. The system is more flexible with respect to installation and management. The software is hosted in a secured server at CTO's headquarters in Barbados and made accessible to authorised users identified by destination for the purpose of entering data and generation of reports.

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<sup>10</sup> <https://www.onecaribbean.org/our-work/research-info-tech/>

## **CHAPTER 8      MANAGEMENT RESPONSE**

8.1      The Statistics Department of Montserrat reviewed the report and is in agreement with the findings and recommendations.

## **CHAPTER 9      AUDIT CONCLUSION**

9.1      The Office of the Auditor General has determined from this post-implementation benefits study that although the CTO-MIST software is very outdated, it has met the Statistics Department's work objectives and delivered the anticipated benefits of collecting, storing, and processing a wide range of tourism data, to be used for the accurate and efficient collection, processing, compilation, analysis, interpretation, and dissemination of Montserrat's Tourism statistical data.

9.2      The CTO-MIST software was upgraded since the initial implementation in 2001, and the department is also in the process of upgrading from the obsolete version of MIST2006, to the online version TIMS. This online edition is anticipated to further enhance the department's capability to monitor, realise, detect changes, and generate accurate reports pertaining to seasonality, in a more timely and efficient manner.

## REFERENCES

### Web Pages

<https://www.onecaribbean.org/content/groups/a6874d6c-07db-4a6b-bb94-9f08e94ae468/PPTTourismStatsCTOMist.pdf>

<http://statsdmt.com/about/>

# APPENDICES

### Functions of Statistics Office

3. For the purpose of this Act there shall be a Statistics Office the duties of which shall be—

\* See Montserrat Constitution Order 2010

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- (a) to take any census in Montserrat;
- (b) to collect, compile, analyse, abstract and publish statistical information relating to the social, agricultural, mining, commercial, industrial, economic and general activities and conditions of the inhabitants of Montserrat;
- (c) to collaborate with the departments of Government in the collection, compilation, analysis and publication of statistical records of administrations and departments; and
- (d) generally to organize a co-ordinated scheme of social and economic statistics relating to Montserrat.

### Delegation of functions

4. The Statistical Officer may delegate in writing his powers and functions under this Act.

### Power to direct taking of population census

5. The Governor acting on the advice of Cabinet may by Order published in the *Gazette* direct that a census shall be taken for Montserrat or any part thereof, or any class of inhabitants thereof, and any such Order may prescribe—

- (a) the date or dates on or between which such census is to be taken;
- (b) the persons by whom and with respect to whom the returns for the purpose of such census are to be made; and
- (c) the particulars to be stated in such returns and the information to be obtained and compiled in such census.

(Amended by Act 9 of 2011)

### Collection and compilation of statistics

6. (1) Subject to the provisions of this Act, the Statistical Officer may, and on the direction of the Governor acting on the advice of Cabinet shall, collect, whether in conjunction with any census or not, statistics relating to all or any of the matters set out in the First Schedule to this Act either in Montserrat generally or in any part thereof. (Amended by Act 9 of 2011)

(2) The Statistical Officer shall cause the statistics collected under this Act to be compiled, tabulated and analysed and, subject to the provisions of this Act, may cause such statistics or abstracts thereof to be published, with or without comments thereon, in such manner as he may determine.

**FIRST SCHEDULE***(Section 7)*

1. Population and housing
2. Vital occurrences and morbidity
3. **Immigration and emigration**
4. Internal and External Trade
5. Primary and secondary production
6. Agriculture, including dairy farming, horticulture, pastoral and allied industries
7. Fishing
8. Factories, mines and productive industries generally
9. Employment, unemployment and underemployment
10. Income, earnings, profits and interest
11. Social, educational, labour and industrial matters including co-operative groups and societies, associations of employers, employees and other persons generally
12. Industrial disturbances and disputes
13. Banking, finance and insurance—  
assets, liabilities, deposits, withdrawals, remittances (including inter-bank transactions), currency dealings, currency in circulation:  
Provided that, no information may be sought concerning any individual account
14. Commercial and professional undertakings
15. Distributive trades
16. Health
17. Transport and communication in all forms, by land, water and air
18. Wholesale and retail prices of commodities, rent and cost of living
19. Injuries, accidents and compensation
20. Stocks of manufactured and unmanufactured goods
21. Land tenure and the occupation and use of land
22. Orders, work in progress, outgoings and costs (including work given out to contractors) and details of capital expenditure
23. Debts outstanding, fixed capital assets and plant (including the acquisition and disposal of those assets and plants)
24. Such other matters as may from time to time be prescribed

### APPENDIX III - CTO-MIST Fault/Error Logs and System Change Request Forms

#### CTO-MIST SOFTWARE FAULT / ERROR LOG

LOG ENTRY REFERENCE	DATE
FAULT REPORT	
Operator Name _____	
Organisation _____	
Department _____	
Programme Name _____	
Date Occurred _____	Time _____
STATUS <input checked="" type="checkbox"/>	Urgent <input type="checkbox"/> Please Comment <input type="checkbox"/>
ERROR DESCRIPTION	
Displayed Message	
System Error	
Other Comments	
VALIDATED BY SYSTEMS MANAGER (Signature) _____ Date _____	
SYSTEM MANAGER COMMENTS	
DATE PASSED TO CTO _____	

#### CTO-MIST SYSTEM CHANGE REQUEST (SCR)

SCR LOG ENTRY REFERENCE	DATE _____
REQUEST	
Operator Name _____	
Organisation _____	
Department _____	
Programme Name _____	
SCR DESCRIPTION	
VALIDATED BY SYSTEMS MANAGER (Signature) _____ Date _____	
SYSTEM MANAGER COMMENTS	
PRIORITY STATUS <input checked="" type="checkbox"/>	Urgent <input type="checkbox"/> Important <input type="checkbox"/> Desirable <input type="checkbox"/>
DATE PASSED TO CTO _____	