



ENVIRONMENTAL MANAGEMENT PLAN

AGRICULTURAL OPERATIONS

OGLE AIRPORT



July 2015

Revised November 16, 2015

FOREWORD

The aerial application of chemical substances such as pesticides and fertilizers is a cost effective and efficient method, the world over, for tending to crops that are cultivated over extensive areas. Recently, a number of farmers engaged in the cultivation of rice and sugar cane respectively approached Air Services Limited (ASL) for assistance with respect to the aerial application of various chemical substances to their crops. In line with its commitment to national development, and having more than 50 years' experience in the local aviation sector, ASL, based at Ogle International Airport (OAI), agreed to put its formidable capabilities at the service of the farmers, thereby re-establishing *its agricultural operations*. To this end, ASL initiated investments on the internal infrastructural needs of this project; i.e. equipment, regulatory compliance, personnel training and facilities.

Aircraft

To meet the equipment needs, ASL saw it prudent to acquire state of the art aircraft specially designed and outfitted for the aerial application of chemicals under local conditions; the Ayres 510 Thrush.

Regulatory Compliance

A critical **requirement** for taking the agricultural operations forward is that ASL must produce an Environmental Management Plan (EMP) acceptable to the Environmental Protection Agency (EPA). It is acknowledged that there are numerous hazards associated with the use of chemicals typically employed for tending crops. Generally, the operatives engaged in *mixing* and *uploading* such chemicals to the aircraft and those tasked with *cleaning* the aircraft are more exposed to these hazards. Also, people and livestock living in the vicinity of any fields that are 'sprayed' or 'dusted' may be exposed as well, **unless specific mechanisms are put in place**. In light of these conditions, ASL has taken the obvious and associated hazards into consideration, and by way of this Environmental Management Plan (EMP) **sought to develop and** implement effective measures to mitigate these hazards. This EMP, in essence, **presents** the measures and practices that ASL will put in place to manage its agricultural operations, protect its operatives engaged directly in the provision of this service and protect residents and livestock living or dwelling near the various crops targeted.

Training

Since **its** personnel will play a pivotal role in supporting this operation, ASL organized training by the PTCCB for its personnel in the management of the chemicals used for tending agriculture crops.

Facilities

In restarting its agricultural operations, ASL will collaborate with GUYSUCO, sharing its special agricultural facilities at Ogle International Airport that were developed *specifically* for managing the *uploading* of chemicals into the aircraft, the *cleaning* and decontamination of the aircraft, and the safe *disposal* of chemical residues. GUYSUCO has been involved in the aerial application of chemicals for over 50 years, and the relationship now forged between ASL and GUYSUCO shall enhance the anticipated levels of hazard management enshrined in this EMP.

TABLE OF CONTENTS

Foreword	1
Terms of Reference for EMP	6
Acknowledgements	7
Acronyms	8
Glossary	9
 1.0 Introduction: The context and options for aerial application of chemicals in Guyana	 12
1.1 The need for the aerial application of chemicals	12
1.2 The use of pesticides in Guyana	13
1.3 Managing the menace of pesticides	14
 2.0 The legal framework for the agricultural aviation environment	 16
2.1 Introduction	16
2.2 The Guyana Civil Aviation Authority	17
2.3 Ogle Airport Inc.	17
2.4 The Pesticides and Toxic Chemicals Control Board	18
2.5. The Environmental Protection Agency	19
2.6 Ministry of Social Protection/Occupational Safety & Health Act #32 of 1997	20
2.7 Other contexts	20
 3.0 Profile of the developer-Air Services Limited	 21
 4.0 The Ogle facility Current Environmental Management of Chemicals	 22
4.1 The GUYSUCO agricultural aviation facility	22
4.2 Chemical storage practices-ENMORE	24
4.3 Chemical uploading procedures-Ogle	26
4.4 The actual aerial spray	27
4.5 Cleaning of the Aircraft	27
4.6 Treatment of the rinsate	28
4.7 Ground crew hygiene	31
4.8 Decontamination of PPE	31
4.9 Observations	32
 5.0 Feedback from Stakeholders re GUYSUCO's Aerial Spraying Activities	 26
5.1 Preparatory tasks for ensuring residents welfare	26
5.2 Concerns of stakeholders	27
5.3 The PTCCB's complaint protocol	34
5.4 The Ogle Airport Community	34
 6.0 ASL'S Crop Aerial Spraying of Chemicals Project	 36
6.1. ASL's Objectives	36
6.2 ASL's Goals for the agricultural sector	36
6.3 ASL's core resources for this initiative	37

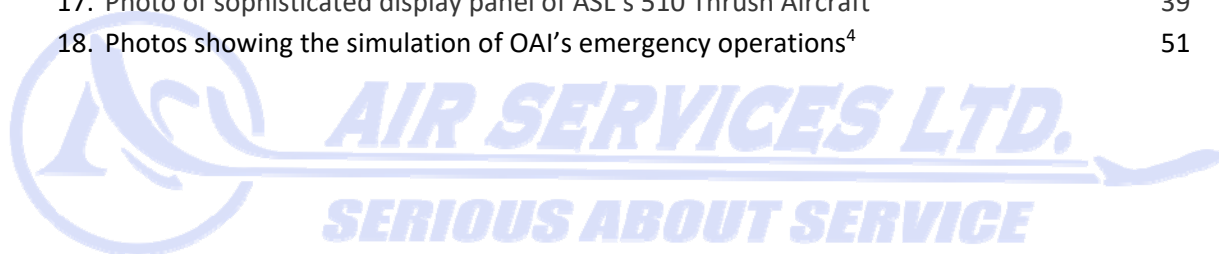
6.3.1 Personnel	37
6.3.2 Assets	37
6.3.3 Operations Base	37
7.0 Hazard Analysis	40
7.1 Hazards with pesticide use	40
7.2 The special aviation environment	40
7.3 Hazard management	41
8.0 ASL's Environmental Management Plan	44
8.1 Overview	44
8.2 ASL's work plan	44
8.3 Monitoring of the agricultural operations	44
8.4 Emergency Response Plan.	51
8.4.1 Peculiarities of agriculture operations	51
8.4.2 Aircraft problems	51
8.4.3 Evacuation plans-ASL	51
8.4.4 Injuries/Accidents	52
8.4.5 Spillage of hazardous chemicals	52
9.0 References	57
10.0 Annexes	59
TABLES	
1. Typical parameters for ASL's 510 Thrush Aircraft	38
2. Common hazards in pesticide use via aerial means	42
3. Actions to be taken by ASL for the execution of its agricultural operations.	45
4. Basic modules to be used for training operatives ¹	47
5. Checklist for Ground Crews and Supervisors for safe aerial spraying applications ²	48
6. Emergency Response Plan for mitigating the impacts of toxic chemicals	52
7. List of materials for the Spill Kit	56

¹ ASL will **continue** to keep abreast of international practices and technological developments and incorporate these into its training programmes as appropriate.

² Adopted from FAO, 2001.

FIGURES

1. Drivers of employment in the rice industry	12
2. Ramp-GUYSUCO's Ogle Airport agricultural aviation facility	13
3. Photograph of Ogle Airport ³	18
4. Photograph of GUYSUCO's Agricultural Ramp, Ogle Airport	22
5. Ramp Area showing bunded walls	23
6. Sump filled with water from rainfall	23
7. A team from GUYSUCO uploading chemical into the aircraft	24
8. Photograph GUYSUCO's Pesticide Bond, Enmore	25
9. Emergency facilities; <i>left</i> -eye wash kit; <i>right</i> -emergency shower	25
10. Illustration of precautions taken by GUYSUCO at its Enmore Pesticide Bond	26
11. Ground Crews dressed for cleaning the aircraft	28
12. Freshwater storage facilities-Ogle Agricultural facility	29
13. The primary unit of GUYSUCO's rinsate treatment facilities, Ogle Airport	30
14. Typical facilities for washing PPE-Enmore	31
15. Maps showing areas where sugar cane and rice respectively are cultivated	33
16. Image of a 510 Thrush Aircraft	38
17. Photo of sophisticated display panel of ASL's 510 Thrush Aircraft	39
18. Photos showing the simulation of OAI's emergency operations ⁴	51



³ Source: ASL.

⁴ Source; Kaieteur News , February 28, 2015

ANNEXES

- I. List of Agencies and Individuals Consulted
- II. The Roles and Responsibilities of the GCAA.
- III. Air Operator License Issued To ASL by GCAA
- IV. Certificate of Approval of Aircraft Maintenance Issued To ASL by GCAA
- V. Map of Ogle Airport & Other Aerodromes-Guyana
- VI. Extracts Of Relevant Sections of the Occupational Safety & Health Act,
- VII. Organizational Chart-ASL
- VIII. ASL's Hangar and Ancillary Facilities-Ogle Airport
- IX. Ogle International Airport:
- X. Core Functions of the Pesticides and Toxic Chemicals Control Board
- XI. Copy of a Certificate That PTCCB Awarded To ASL
- XII. Illustration of education and awareness note Issued by the PTCCB
- XIII. Record of Pesticide Application
- XIV. Notes on the Toxicity of Pesticides
- XV. ASL's Human Resources Policy
- XVI. ASL's Environmental Policy
- XVII. Fire Point and Evacuation Plan
- XVIII. Typical signs and symptoms of harmful effects of Pesticides.
- XIX. Personal Protective Equipment and their Management
- XX. Copy of MOU between ASL and GUYSUCO
- XXI. ASL's Agricultural Aircraft Training Schedule
- XXII. ASL'S Quarterly Training Schedule for Ground crews
- XXIII. ASL's Flight Training Methodology-Agriculture Operations
- XXIV. Key elements of ASL's protocols for aerial spraying operations
- XXV. Specimen of ASL's Loading Forms
- XXVI. Typical warning signs used on the ground during aerial spraying operations
- XXVII. Precautions and Safe Handling of Chemicals
- XXVIII. GUYSUCO's sample collection data sheet
- XXIX. Specimens of Material Safety Data Sheets
- XXX. Data re local usage of pesticides garnered from import data
- XXXI. CV Of Consultant

TERMS OF REFERENCE FOR THE EMP

On December 3, 2014, ASL submitted an Application for an Environmental Authorization to operate an Aerial Spraying Operation, using Ogle International Airport and GUYSUCO's Agrochemical hangar as a base. The EPA visited GUYSUCO's facilities at Ogle Airport on December 18, 2014 and subsequently wrote ASL on February 16, 2015 indicating that the company should submit an Environmental Management Plan that 'identifies feasible and cost effective measures to reduce potential hazards leading to significant adverse environmental impacts to acceptable levels'.

The EPA also asked that the EMP should cover all phases of the operation, including but not limited to the following:

- a) A detailed description of the Standard Operating Procedures;
- b) Identification of all relevant laws, Regulations and best management practices, pertaining to agrochemical and seed application, for example:
 - a. Notification to surrounding land users;
 - b. Buffer zones for waterways and rivers; and
 - c. Efficient spray coverage, drift minimization and calibration of spray equipment
- c) A description of the impact and mitigation measures regarding spray drift affecting homesteads, farmstead (both livestock and crop farms), non-target organisms such as pollinators and natural enemies, non-target crops, wetlands, etc.;
- d) Best spraying practices under weather conditions for example, wind speed and direction and temperature inversions, etc.;
- e) Cleaning and storage of personal protective equipment;
- f) Pesticide applicator training for pilots and ground support staff;
- g) An Emergency Response Plan, which must include but not be limited to potential accidents during transport, handling, loading, and spraying, emergency treatment for all chemicals to be sprayed and local emergency contacts;
- h) Efficient crop coverage minimizing loss of spray to drift and maximizing optimum droplet spectrum; and
- i) Management of agrochemical waste water and empty chemical containers.

ACKNOWLEDGEMENTS

The inputs and expertise of various persons⁵ in the development of this EMP is hereby acknowledged:

- The management team-Air Services Limited
- Representatives of GUYSUCO Agricultural facility, Ogle Airstrip,
- Representative of GUYSUCO's Blairmont Field Office
- **Representatives of GUYSUCO's East Demerara Estates, Enmore**
- **Representatives of the PTCCB**
- A staff member from the Rice Research Facility, Burma
- The Environmental Officer, Ogle Airstrip Inc.
- Farmers (MMA, CWC, Canal #2)
- Project Officer-GFC
- Ministry of Public Works (Aviation Inspectorate)



⁵ In view of changes at the political level, a number of staffers of various entities asked that their names not be published; others claimed that consultants frequently misrepresent or misquote what they say.