

INTERNATIONAL CYANIDE MANAGEMENT CODE

Mapai Transport, Papua New **Guinea, Transportation** Recertification Audit, **Summary Audit Report**

Submitted to:

International Cyanide Management Institute (ICMI) 888 16th Street, NW-Suite 303 WASHINGTON DC 20006 UNITED STATES OF AMERICA

Mapai Transport Lae, Morobe Province Papua New Guinea

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Important Information





1.0 INTRODUCTION

1.1 Operational Information

Name of Transportation Facility: Mapai Transport Ltd

Name of Facility Owner: Not Applicable

Name of Facility Operator: Mapai Transport Ltd

Name of Responsible Manager: Grant Wakerley, General Manager

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Lae

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1.2 Description of Operation

1.2.1 Mapai Transport

Mapai Transport Ltd (Mapai) is a transportation and logistics company engaged in the transportation of goods within the Morobe Province of Papua New Guinea. Mapai is an International Cyanide Management Code (ICMC) signatory.

The scope of the Mapai Pre-Operational Certification Audit is the road transportation of cyanide from the Port of Lae, Papua New Guinea (PNG) to customer mine sites within PNG. The Port of Lae is not included. At the time of the Transport Certification Audit, Mapai had not commenced transportation of cyanide.

1.2.2 Road Transport

Upon arrival at the Port of Lae, the offloading of all containers is performed by stevedores. Once the cyanide containers are collected from the Port, they are taken to the Mapai Transport Yard where they are stored on the truck overnight in preparation for convoy departure the following morning. At no stage is cyanide removed from the trucks or containers prior to unloading at Barrick's Porgera Joint Venture (PJV) mine site, which is approximately 700 km away.

1.2.3 Transit Storage

Within the scope of this audit, there are no trans-shipping depots or interim storage sites, as defined in the audit protocol.

Storage in transit may occur at the mines depot in Lae in the event that receipt at the port is delayed. In this event containers will not be removed from the trailers and the vehicles will only be parked for a maximum of 24 hours.

Mapai Transport

Name of Facility

Signature of Lead Auditor

13 April 2017

Date





1.3 Auditors Findings and Attestation

Transport Terrassement

Minier is:

☐ in substantial compliance with

Code
☐ not in compliance with

Audit Company:

Golder Associates

Mike Woods, Exemplar Global (113792)

Email: mwoods@golder.com.au

1.4 Name and Signatures of Other Auditors

Name	Position	Signature	Date
Mike Woods	Lead Auditor and Technical Specialist	March	13 April 2017

No significant cyanide exposures and releases were noted as occurring during the audit period.

1.5 Dates of Audit

The ICMC Transport Recertification Certification Audit was conducted over two days between 1 and 2 November 2016.

I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader, established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the International Cyanide Management Institute for Code Verification Auditors.

I attest that this Summary Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the *International Cyanide Management Code Verification Protocol for Cyanide Transportation Operations* and using standard and accepted practices for health, safety and environmental audits.

Mapai Transport
Name of Facility

Signature of Lead Auditor





2.0 TRANSPORTER SUMMARY

2.1 Principle 1 – Transport

Transport Cyanide in a manner that minimises the potential for accidents and releases.

2.1.1 Transport Practice 1.1

Purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide, and to prevent releases of cyanide to the environment.

	⊠ in full compliance with	
The operation is	in substantial compliance with	Transport Practice 1.1
	not in compliance with	

Summarise the basis for this Finding/Deficiencies Identified:

Mapai is in FULL COMPLIANCE with Transport Practice 1.1 requiring cyanide transport routes to be selected to minimise the potential for accidents and releases.

Mapai Transport (Mapai) has developed and implemented a route assessment procedure to assess transport routes and assess the potential for accidents and releases along the transport route. Mapai's Transport Route Assessment (Cyanide) procedure requires the assessment of population along the route, condition and infrastructure of the road and road hazards along the route. At the time of the audit Mapai were delivering to Porgera Mine site and there is only one transport route available between the port and the mine site.

Mapai has documented the assessment in their Dangerous Goods Route Assessment (Porgera) and does detail road hazards along the route, the personnel involved in the assessment, the assessed risk level and controls. Mapai's Dangerous Goods Route Assessment (Porgera) details the risk level for each hazard identified along the route and also provides standard controls for common road hazards including:

- Potholes/poor surfaces
- Bridges
- Villages and markets
- Pedestrian crossings

The risk assessment approach is detailed in Mapai's Hazard Identification, Risk Assessment and Control Procedure – Highway Operations.

Mapai prepares a Journey Management Plan (JMP) for each convoy that includes information on the route condition from the mine site and previous convoys. The road and weather conditions are highly variable and Mapai maintain surveillance of conditions through feedback from the convoys for all types of cargo. For cyanide convoys the Escort Commanders provide feedback to the Operations Manager/DG Transport Manager through daily updates along the route and post convoy debrief.

The overall controls are detailed in the Dangerous Goods Route Assessment (Porgera) and convoys specific controls taking into account conditions at the time of the convoy are detailed in the JMP. The JMP is the tool used to manage convoys and track progress of the convoy.

Mapai Transport

Name of Facility

Signature of Lead Auditor





Mapai does seek input from communities and other stakeholders as necessary. This process is outlined in the route assessment procedure. In practice, this is largely undertaken through consultation with the mining operation from a community perspective. Mapai's process is to utilise the knowledge and network of the mine client to facilitate the consultation process together with Mapai Transport Community Liaison officer. There is only one road available between the port and the mine for all cargo including other dangerous goods and cyanide.

Mapai transport has implemented the use of escorts to manage safety and security concerns along the transport route. Mapai has designated employees that undertake the role of Escorts. Escorts are provided at the front and rear of the convoy and the Escort Commander is in charge of the convoy. Mapai has also designated approved layover stops and contingency stops in the event of transport delays.

Mapai has made arrangements with the mining operation to provide higher level emergency response and has informed their security contractor of their role in the event of an emergency. No other external providers are designated a role with the emergency response plan although it does recognise that the Police may become involved depending on the nature of the incident.

Mapai does not subcontract the transport of cyanide.

2.1.2 Transport Practice 1.2

Ensure that personnel operating cyanide handling and transport equipment can perform their jobs with minimum risk to communities and the environment.

	in full compliance with	
The operation is	in substantial compliance with	Transport Practice 1.2
	not in compliance with	

Summarise the basis for this Finding/Deficiencies Identified:

Mapai is in FULL COMPLIANCE with Standard of Practice 1.2 requiring that personnel operating cyanide handling and transport equipment can perform their jobs with minimum risk to communities and the environment.

Mapai does use only trained and licensed operators to operate its transport vehicles. Mapai has implemented a peer review based training program where drivers are assessed by experienced operators and progress from basic cargo through to dangerous goods.

Training modules have been developed and delivered for operators conducting cyanide convoys. The Cyanide Transport Management Plan (CTMP) provides the following training modules are required to be completed by Drivers:

- Cyanide Awareness Training
- Cyanide Emergency Response
- CTMP Driver Responsibilities
- Fatigue Management.

Mapai Transport

Name of Facility

Signature of Lead Auditor





Drivers are required to hold a current PNG drivers licence and the training packages are provided in English and translated into Pijin by the DG/HSE Manager.

Drivers must complete the training modules which include assessment questions before being able to take part in a cyanide convoy.

A review of training records confirmed that drivers involved in the transportation of cyanide had completed the designated training.

Mapai does not subcontract cyanide transport or handling.

2.1.3 Transport Practice 1.3

Ensure that transport equipment	is suitable for	r the cyanide s	shipment.

	⊠ in full compliance with	
The operation is	in substantial compliance with	Transport Practice 1.3
	not in compliance with	

Summarise the basis for this Finding/Deficiencies Identified:

Mapai is in FULL COMPLIANCE with Standard of Practice 1.3 requiring that transport equipment is suitable for cyanide shipment.

Mapai does use only equipment designed and maintained to operate within the loads it will be handling. The Kenworth prime movers used by Mapai have carrying capacity for 26 000 kg and the drop deck trailers are rated to 40 000 kg. Mapai transport a single 24 000 kg container on a drop deck trailer pulled by the Kenworth prime mover.

Mapai has implemented a preventative maintenance regime for both the prime movers and trailers which involves a pit check following every convoy and a tiered servicing program:

- A Service Every Convoy
- B Service Every 10 000 km
- C Service Every 40 000 km.

A review of records for equipment involved in cyanide transportation confirmed maintenance activities in accordance with Mapai's system. Prime movers and trailers were observed to be in the process of being maintained at the operations workshop during the audit.

Mapai also has a process to inspect equipment prior to departures and Certificates of Roadworthiness are available for the fleet used. Each truck and trailer is subject to an inspection upon returning to the Depot in Lae where there is a thorough visual inspection of the prime mover and trailer for defects or damaged from the convoy.

A review of cyanide delivery documentation confirmed that Mapai carries a single container per truck and trailer combination. As noted above, the vehicles have sufficient capacity for the single container.

Mapai does not subcontract cyanide transport or handling.

Mapai Transport

Name of Facility

Signature of Lead Auditor

13 April 2017 Date

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2.1.4 Transport Practice 1.4

Develop and impleme	ent a safety program for transport of cyanid	le.
	oxtimes in full compliance with	
The operation is	in substantial compliance with	Transport Practice 1.4
	not in compliance with	
Summarise the basis	for this Finding/Deficiencies Identified:	
Manatta ta FULL COM	DUANOE NO OLO LO LO COMO COMO A A CONTRA	See the see see Constant and see all

Mapai is in FULL COMPLIANCE with Standard of Practice 1.4 requiring the operation develop and implement a safety program for transport of cyanide.

There are procedures to ensure that cyanide is transported in a manner that maintains the integrity of the producer's packaging. Soild sodium cyanide is transported in wooden intermediate bulk containers with double bag lining within sea containers. Seals are applied to the doors of the sea containers at the production facility. Mapai inspect the seals placed on the container by the producer when collecting the container from the Port and checks the seals are intact periodically throughout the convoy. The Escort Commander is responsible for conducting and recording the checks throughout the convoy and at the point of delivery to the mine. At no time during the convoy does Mapai open the containers.

A review of convoy documentation indicated the checks are being completed in accordance with Mapai procedures

Placards and signage used to identify the shipment as cyanide meet local and international standards. Placards (diamonds) are placed on the front and rear of the transport vehicle and there is signage on the container. The pictograms and Hazchem codes on the diamonds are consistent with those presented in the Australian Dangerous Goods Code.

Mapai has implemented a safety programme for cyanide transport that includes vehicle inspections prior to each shipment. Vehicles are inspected by the drivers and checked by the escort leaders before each departure. Following each convoy the prime mover and trailer is subject to a pit inspection for defects and damage prior to being released for selection in the next convoy. There is also a tiered preventative maintenance program which is recorded in their fleet management software.

Mapai limits driver hours and drivers must have minimum 8 hours rest between shifts and 24 hours rest prior to the commencement of a convoy.

There are procedures to prevent loads from shifting and the sea containers are secured to the drop deck trailers via twist locks and these are inspected when the container is secured to the trailer and then periodically through the convoy including pre-departure each day.

The Transport Management Plan (TMP) provides procedures by which transportation can be modified or suspended if necessary. Mapai has considered alternative places to park the convoy should it be necessary. The use of these locations needs to be authorised by the Operations Manager/Logistics Manager.

Mapai Transport

Name of Facility

Signature of Lead Auditor





Mapai does have a drug abuse prevention program that includes education and awareness information in relation to the effects of drugs and alcohol. Fit testing measure for blood alcohol have been deployed and the Escort Commander is responsible for completing the checks.

Records are retained documenting the completion of the above activities. Maintenance activities are recorded on work orders and within the Transmate Software System. Convoy documentation is retained and

		nically. Convoy documentation includes pre-dhecks and commentary on the convoy.	leparture checks, chain of custody		
Mapai does r	not subcontract	cyanide transport or handling.			
2.1.5	Transport P	ractice 1.5			
Follow interes	national standa	ards for transportation of cyanide by sea ar	nd air.		
		in full compliance with			
The operation	on is	in substantial compliance with	Transport Practice 1.5		
		not in compliance with			
Summarise	the basis for th	nis Finding/Deficiencies Identified:			
		uiring the operation to follow international stan ICABLE to Mapai.	dards for transportation of cyanide		
Mapai does r	not transport cor	nsignments of cyanide by sea or air within the	scope of this audit.		
2.1.6	Transport P	ractice 1.6			
Track cyanic	de shipments t	o prevent losses during transport.			
		☑ in full compliance with			
The operation	on is	in substantial compliance with	Transport Practice 1.6		
		not in compliance with			
Summarise	the basis for th	nis Finding/Deficiencies Identified:			
•		NCE with Standard of Practice 1.6 requiring the during transport.	e operation track cyanide		
	Mapai transport vehicles do have means to communicate with the transport company, the mining operation, the cyanide producer or distributor and/or emergency responders throughout the convoy.				
There is a global positioning system (GPS) control Centre at the Lae depot that can communicate with the drivers and provide instruction through in vehicle management system (IVMS) fitted to the prime mover. In addition mobile phones and satellite phones are available for communication between the convoy and operations team.					
Radio and mobile phones provide the means of communication within the convoy and the Escort Commander is responsible for communicating issues or delays back to the Control Centre. Communication equipment is periodically checked for functionality and is part of routine checks.					
Mapai has co	mpleted a route	e assessment and no identified blackout areas	were identified along the current		

13 April 2017

Date

the mobile phone coverage.

Mapai Transport

Name of Facility

transport route. The IVMS system provides a means of communication throughout the convoy in addition to

Maderils

Signature of Lead Auditor



The vehicles are fitted with GPS tracking and the real time location of the convoy is monitored in the control room in Lae 24 hours a day. The GPS Control Centre has a number of screens showing location and direction of travel and another screen dedicated to alerts.

In addition to the GPS tracking a journey management plan is developed for each convoy and the escorts check in along the route.

Each container collected from the port is accompanied by chain of custody documentation and the container is checked against the bill of loading. This inspection also checks that the seals placed on the container are intact.

The seals on the container are checked periodically along the transport route typical prior to departure after stopping. The containers are again checked together with the seals with handover of the consignment at the mine site. The chain of custody documentation is signed by the mine and the escort commander. Shipping records indicating the amount of cyanide in transit are available and Material Safety Data Sheets are available during transport.

Mapai does not subcontract cyanide transport or handling.

2.2 Principle 2 – Interim Storage

Design, construct and operate cyanide trans-shipping depots and interim storage sites to prevent release and exposures.

2.2.1 Transport Practice 2.1

Store cyanide in a ma	nner that minimises the potential for accid	lental releases.		
in full compliance with				
The operation is	in substantial compliance with	Transport Practice 2.1		
not in compliance with				
Summarise the basis for this Finding/Deficiencies Identified:				

G

Standard of Practice 2.1 requiring transporters design, construct and operate cyanide trans-shipping depots and interim storage sites to prevent release and exposures is NOT APPLICABLE to Mapai.

Within the scope of this audit, there are no trans-shipping depots or interim storage sites, as defined in the audit protocol. Within the scope of this audit, there are no trans-shipping depots or interim storage sites, as defined in the audit protocol.

Storage in transit may occur in the event that transport is delayed. In this event, containers will not be removed from the trailers and the vehicles will only be parked for a maximum of 24 hours.

Mapai Transport

Name of Facility

Signature of Lead Auditor





2.3 Principle 3 – Emergency Response

Protect communities and the environment through the development of emergency response strategies and capabilities.

2.3.1 Transport Practice 3.1

Prepare detailed Eme	rgency Response Plans for potential cyani	de releases.			
⊠ in full compliance with					
The operation is	in substantial compliance with	Transport Practice 3.1			
	not in compliance with				

Summarise the basis for this Finding/Deficiencies Identified:

Mapai is in FULL COMPLIANCE with Transport Practice 3.1 requiring the operation prepare detailed Emergency Response Plans for potential cyanide releases.

Mapai has developed and implemented a cyanide transport emergency response plan (CTEMP). The plan outlines the response scenarios and action to be taken in the event of an emergency. The emergency response plan compliments the actions detailed in the CTMP.

The CTEMP is appropriate for the selected transportation route; Mapai does not have an interim storage facility. The emergency response plan is based on scenarios that have been derived from the transport management plan and route survey process. The plan contains four scenarios that have been developed for foreseeable cyanide incidents along the transport routes.

- Scenario A Cyanide Related Injury
- Scenario B Cyanide Transport Event
- Scenario C Fire Involving Cyanide
- Scenario D Solid Cyanide Spills.

The plan does consider both the physical and chemical form of cyanide. Mapai transport solid sodium cyanide in Intermediated bulk containers (IBCs) within sea containers. The container and IBCs provide multiple layers of protection from release in the event of an accident. Transport is via road with a single container secured to a drop deck trailer with twist locks pulled by a 6x4 prime mover. The response scenarios provided in the plan take into account the properties of the product in the response actions developed.

The scenarios and response actions detailed in the plan take into account the types of road hazards identified through the route assessment process. The variable condition of the road and weather conditions are the main hazards for the transport along the route.

The CTEMP details the actions to be taken in the event of an emergency including:

- Initial assessment of the scene
- Notification of the emergency
- First aid and evacuation of the area.

Mapai Transport

Name of Facility

Signature of Lead Auditor





Different response actions are provided for solid spills and those where the solid product has come into contact with water or liquids. The plan also identify the roles of outside responders and medical facilities in the response process. The CTEMP identifies the Porgera Joint Venture (PJV) emergency response team (ERT) as the primary external responder for event that exceed the capability of the Mapai team. There are three levels of emergency detailed within the plan.

Level one – the incident is assessed is to be within Mapai's capabilities to respond and control. The PJV ERT is on standby.

Level two – the incident is assessed by the Escort Commander and the DG Transport Manager to be outside Mapai's capabilities, the DG Transport Manager requests PJV ERT to respond.

Level three – An incident that involves a loss of containment near or in a water way or if there is significant injury or the potential of significant injury or fatality. The DG Transport Manager automatically requests PJV ERT to attend and assume control of the scene. Mapai provide logistical support.

Communication with communities will be undertaken through the mine's community team.

2.3.2 Transport Practice 3.2

Designate appropriate resp	onse personnel and	commit necessary	resources for emerge	ncy
response.				
	—			

•		
	in full compliance with	
The operation is	in substantial compliance with	Transport Practice 3.2
	not in compliance with	

Summarise the basis for this Finding/Deficiencies Identified:

Mapai is in FULL COMPLIANCE with Transport Practice 3.2 requiring they designate appropriate response personnel and commit necessary resources for emergency response.

Mapai does provide emergency response training of appropriate personnel. The training requirements are set out in the CTEMP. The escort personnel complete the following mandatory training modules:

- Cyanide Awareness Training
- Cyanide Emergency Response
- Cyanide Transport Management
- Cyanide Transport Emergency Management
- HCN Monitor Use
- Personal Protective Equipment (PPE) for use in an Emergency.

In addition to the training outlined above the operation conducts mock exercises to test the response to identified scenarios and provide training on the response actions.

Mapai Transport

Name of Facility

Signature of Lead Auditor





There are descriptions of the specific emergency response duties and responsibilities of personnel. These are detailed in the CTEMP which described actions for the following:

- Mapai General Manager
- DG Transport Manager
- Escort Commander
- PJV ERT.

Drivers' responsibilities are outlined in the CTMP and involve assisting the escort commander in securing the scene.

There is a list of all emergency response equipment that should be available during transport or along the transportation route. This is provided in the ERP and also in the pre-departure checks that are performed for each convoy. Response equipment includes personal protective equipment, HCN monitor, signage, recovery tools and neutralisation chemicals. This equipment is carried by the escorts.

A review of completed pre-start checklists, interviews with escorts and site inspection confirmed equipment was available and in suitable condition for use.

The CTEMP details the training requirements and the refresher periods and this is tracked through the training matrix. At this stage refresher training has not yet been provided as the operation has recently rolled out the designated training. Refresher training is provided on an annual or two yearly basis depending on the module.

A review of pre-departure records confirmed that Mapai has systems in place to check that equipment detailed is available during transport. An inspection of vehicles and interviews with drivers and escorts confirmed that the equipment was available and in serviceable condition.

Mapai does not subcontract cyanide handling or transport.

Mapai Transport
Name of Facility

Signature of Lead Auditor





2.3.3 Transport Practice 3.3 Develop procedures for internal and external emergency notification and reporting.

In full compliance with
 The operation is ☐ in substantial compliance with
 Transport Practice 3.3

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

Mapai is in FULL COMPLIANCE with Transport Practice 3.3 requiring that they develop procedures for internal and external emergency notification and reporting.

There are procedures and current contact information for notifying stakeholders including the supplier, mine and government agencies. CTEMP provides the escalation process for notifying Mapai Management, the mine and the supplier. A list of key contacts has been developed and is included as an appendix to the CTEMP.

Community contact is managed through the interface with the mining operation with Mapai providing initial information on the location and nature of the emergency to the PJV Emergency Team. There are systems in place to ensure that internal and external emergency notification and reporting procedures are kept current. The contract lists is update on an annual basis as a minimum.

2.3.4 Transport Practice 3.4

Develop procedures for remediation of releases that recognise the additional hazards of cyanide treatment.

in full compliance with

The operation is in substantial compliance with Transport Practice 3.4

not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

Mapai is in FULL COMPLIANCE with Transport Practice 3.4 requiring that they develop procedures for remediation of releases that recognise the additional hazards of cyanide treatment.

Mapai has developed procedures for the recovery and neutralisation of cyanide including solids and solutions. Mapai has made arrangements with PJV for their ERT resources to respond and undertake recovery and neutralisation activities of spilled product should it be necessary. Mapai will provide logistical support to the PJV ERT to enable neutralisation or recovery of product.

The pre-incident plans contained in the CTEMP note that neutralisation or decontamination procedures are not to be carried out if there is a risk of decontamination chemicals and by-products entering a water body.

Mapai Transport

Name of Facility

Signature of Lead Auditor





2.3.5 Transport Practice 3.5

Periodically evaluate	response procedures and capabilities and	revise them as needed.
	oxtimes in full compliance with	
The operation is	in substantial compliance with	Transport Practice 3.5
	not in compliance with	

Summarise the basis for this Finding/Deficiencies Identified:

Mapai is in FULL COMPLIANCE with Transport Practice 3.5 requiring the operation periodically evaluate response procedures and capabilities and revise them as needed.

Mapai does have provisions for periodically reviewing and evaluating the plans adequacy. The CTEMP provides for review:

- Every three years, or
- After every incident which requires activation of the CTEMP
- Emergency exercises, where actions are identified that change the process
- Whenever there is a new, or a change to an existing, related procedure
- Transportation audits and assessments, as required
- When there is a relevant organisational change.

CTEMP also provides that desktop and practical exercises will be undertaken every two years to evaluate their response and the adequacy of their plan. The CTEMP also provides for monthly training for the escorts on response actions, escalation and use of PPE.

There are provisions for conducting transport related mock drills, these are undertaken on a two year basis and the organisation has undertaken two transport incident drills to date along with training with the PJV ERT on technical response actions.

There are procedures to evaluate performance after its implementation and revise as needed. Mapai has not had to activate the plan during the audit period and the reviews have been based on the mock drills undertaken and feedback from consultation with supplier and mine.

Mapai Transport

Name of Facility

Signature of Lead Auditor





3.0 IMPORTANT INFORMATION

Your attention is drawn to the document titled – "Important Information Relating to this Report", which is included in Appendix A of this report. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder Associates has under the contract between it and its client.

Mapai Transport

Name of Facility

Signature of Lead Auditor





Report Signature Page

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Mike Woods

ICMI Lead Auditor and Technical Specialist

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APPENDIX A

Important Information





IMPORTANT INFORMATION RELATING TO THIS REPORT

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