

IAGSA Member Self-Assessment Questionnaire

Company Name: Xcalibur Airborne Geophysics	
Location: South Africa	
Date of Assessment: 5 Oct '17	
Assessment Questionnaire completed by: J.Holla	nder
Key Management Personnel	<u>Position</u>
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Total # Employees:	

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Planning – All Operations				
Title	IAGSA Recommendation	Compliance Level	Explanation of Compliance	
Survey Planning	The following is a list of IAGSA I when planning airborne survey of Prior to commencing a survey, do you conduct a detailed risk assessment which identifies the safe survey height?		es which all members should take into account of type of survey or terrain. Always	
	Prior to conducting a survey do you establish a crew rotation schedule which considers factors such as remoteness of site, severity of climate, quality of accommodation, food and personal considerations?	☐ Always☐ Sometimes☐ Never	Always	
	Do you have a minimum temperature limit for cold weather operations?	☐ Always☐ Sometimes☐ Never☐ N/A	N/A	



Do you limit the use of aircraft heaters or air-conditioning in the interest of "clean" data?	☐ Always ☐ Sometimes ☐ Never	Never
Do you require the use of oxygen for all aircrew for survey flights or portions thereof conducted above 10,000 feet ASL?	☐ Always ☐ Sometimes ☐ Never	Never
Do you have a drug and alcohol policy?	☐ Yes ☐ No	Yes
Are aircrew members required to wear long trousers or a flight suit, closed shoes, have gloves available and clothing appropriate for the environmental conditions?	☐ Always ☐ Sometimes ☐ Never	Sometimes
For fixed wing surveys, is a risk assessment conducted to determine whether or not helmets should be worn by the flight crew members?	☐ Always ☐ Sometimes	N/A , No Ra conducted as Helmets are always worn on survey ops, not ferries



		☐ Never	
		□ N/A	
	For helicopter surveys, are the flight crew members required	☐ Always	NA
	to wear a flight helmet?	Sometimes	
		☐ Never	
	Are flight crew members paid or given an incentive based	☐ Always	Never
	upon hours or kilometers flown?	Sometimes	
		☐ Never	
Emergency Response Planning	Do you develop project specific emergency response	☐ Always	Always
	plans for each project?	Sometimes	
		☐ Never	
	Does your company have an overall crisis management	☐ Yes	Yes
	plan?	☐ No	
Flight Following	Do you operate a satellite tracking system on all aircraft?	Always	Always
Flight Following	plan? Do you operate a satellite	□ No	Always



		Sometimes	
		☐ Never	
	Is the position reporting frequency of the tracking system set to 2 minute	Yes	Yes
	intervals as a minimum?	│	
Single Pilot Only Surveys	Do you conduct single Pilot Only Surveys (no equipment	☐ Always	Always
	operator)?	Sometimes	
		☐ Never	
	If so, does the Pilot have equipment operation duties in	Always	Never, except line changing but this is natural to them as they do this on Ag-Operations
	addition to those normally associated with flying the	Sometimes	
	aircraft?	☐ Never	
		□ N/A	
	Are additional risks associated with single pilot only	☐ Always	Always
	operations detailed in the risk assessment?	Sometimes	
		☐ Never	





	Do planned minimum fuel reserves consider site specific contingencies?	☐ Always ☐ Sometimes ☐ Never	Always
Flight and Duty Times	Are the following Flight & Duty Times adhered to?		
Single Pilot Operation Maximum Flight Times	A maximum of 8 hours flight time per day.	☐ Always	Always
		Sometimes	
		☐ Never	
	A maximum of 5 hours flight time on survey per day	☐ Always	Sometimes.
	(excluding transit time)	☐ Sometimes	
		☐ Never	
	A maximum of 40 hours flight time in any 7 consecutive day	☐ Always	Always
	period	Sometimes	
		☐ Never	
	A maximum of 100 hours flight time in any consecutive 28 day period	☐ Always	Always



		Sometimes	
		☐ Never	
	A maximum of 1000 hours in any consecutive 365 day	☐ Always	Always
	period.	Sometimes	
		☐ Never	
	If extensions to the single pilot flight times are used has the extension criteria	☐ Always	Always
	recommended by IAGSA been	Sometimes	
	met?	☐ Never	
		□ N/A	
Dual Pilot Operations	A maximum of 10 hours flight	Always	NA
Maximum Flight times	time per day.	☐ Sometimes	
		☐ Never	
	A maximum of 8 hours flight time on survey (excluding	Always	NA
	transit time).	☐ Sometimes	
		☐ Never	



	A maximum of 45 hours flight time in any consecutive 7 day		Always	NA
	period.		Sometimes	
			Never	
	A maximum of 120 hours flight time in any consecutive 28 day		Always	NA
	period.		Sometimes	
			Never	
	A maximum of 1200 hours flight time in any consecutive		Always	NA
	365 day period.		Sometimes	
			Never	
Maximum Duty Times	The maximum duty time in any one day shall not exceed 14		Always	Always
	hours		Sometimes	
			Never	
	The pilot shall have a minimum of 2 days rest within		Always	Always
	a 14 day period. These may be taken separately or		Sometimes	
	together. If taken separately, one day rest shall be defined as 30 consecutive hours free		Never	
	from duty.	1		



Emergency Beacon / Radio	Is each aircrew member required to carry on their person essential survival items including: a personal locator beacon means to start a fire, knife and a signal mirror?	☐ Always ☐ Sometimes ☐ Never	Sometimes, Elbas not always used, others always
Fuel Quality Control – Storage Tanks	adequacy of this quality control at there a procedure in place to unknown or questionable:	and take all available m	naller centres. The crew must determine the neans to ensure against boarding contaminated fuel.
	Check that Fuel Quality Control Check and Delivery	☐ Always	Always
	documents are current and available.	Sometimes	
		Never	
	Check that the fuel servicing vehicle / facility is identified with the fuel type handled.	☐ Always	Always
	,,	☐ Sometimes☐ Never	
	Check that the facility is clean and maintained.	☐ Always	Always
		Sometimes	
		☐ Never	



Check that bonding wires and connections are in good condition. Always			
place and date of last element replacement. Always Sometimes Never Check that a sample is clear and bright downstream of the filter. Always Always Always Always Request or conduct a water test with paste or syringe and capsules. Always Always Always Always Always Always Check that a sample from the low point of the tank is clear bright and free of water. If	connections are in good	Sometimes	Always
and bright downstream of the filter. Always Sometimes Never Request or conduct a water test with paste or syringe and capsules. Always Sometimes Never Always Always Always Always Always Always Always Check that a sample from the low point of the tank is clear bright and free of water. If	place and date of last element	Sometimes	Always
test with paste or syringe and capsules. Always Sometimes Never Check that a sample from the low point of the tank is clear bright and free of water. If Sometimes Always Always	and bright downstream of the	Sometimes	Always
low point of the tank is clear bright and free of water. If	test with paste or syringe and	Sometimes	Always
	low point of the tank is clear bright and free of water. If		Always



	drain, do a dip of the tank using water paste.	Never	
Fuel Quality Control - Drums	When using drummed fuel are the	nere procedures in plac	ce to ensure the following requirements?
	Verify the expiry date of the drums.	☐ Always	Always
		Sometimes	
		☐ Never	
	A "go no-go" filter be used for all refueling from drums.	☐ Always	Always
		Sometimes	
		☐ Never	
	All drum fuel is visually checked for clarity and color and water tested with paste or fuel syringe and capsules	☐ Always	Always
		Sometimes	
	before use.	☐ Never	
	Only clearly branded drums with both seals intact are be	☐ Always	Always
	used unless the pilot knows the "history" of the drum since	Sometimes	
	the seals were broken and retests the fuel for	☐ Never	
	contamination before use.		



Aircraft sump drains be checked before the first flight of the day and after each refueling.	☐ Always ☐ Sometimes ☐ Never	
Drums are stored on their sides, clear of the ground with bungs horizontal in an area not subject to flooding. Undercover storage should be considered if drum stock are to be kept for a long time. When not in use, fuel pumps are protected from water and other contamination.	☐ Always ☐ Sometimes ☐ Never ☐ Always ☐ Sometimes ☐ Never ☐ Never	Always
Bungs should be sealed and the drum placed on its side for short term storage (i.e. overnight) of a partially filled drum.	☐ Always ☐ Sometimes ☐ Never	Always



Night Surveys	Typically, survey flights are conducted at low heights in day VMC, but if the low height is removed coupled with a smooth air requirement, such as for gravity surveys, it may be desirable to conduct night flights. Such flights can be conducted safely as long as there are adequate procedures to prevent a "controlled flight into terrain" CFIT accident. Are procedures in place to ensure the following requirements:			
	Are night surveys flown at least 1000 feet above all obstacles within the operational area and a 10 nautical mile buffer around the operational area? Does the operational area include the maneuvering area for line turns and lead-ins?	☐ Always ☐ Sometimes	NA	
		☐ Never ☐ N/A		
	Is a VMC reconnaissance flight performed in each block?	☐ Always ☐ Sometimes ☐ Never	NA	
		□ N/A		
Monitoring of radios	During survey flights, are radios and transponders turned on and selected to the appropriate ATC or flight service frequencies.	☐ Always	Always	



	Additionally, equipment permitting, common air to air and emergency frequencies (121.5MHz) should also be monitored.	Never	
Turning Radius			nt margin above the stall speed, however in a steep varning and a stall in the turn at low level will likely
	Are all turns at low level limited	│	Never
	to a maximum angle of bank of 30 degrees and be done at a	│	
	constant altitude. Are climbs or	Sometimes	
	descents allowed to be carried out during the turn?	☐ Never	
	Towed	Geophysical Arra	ays
Towed Geophysical Arrays – All aircraft types	This section applies to all airborn rotary or fixed wing aircraft.	ne surveys utilizing ged	physical arrays suspended below and/or towed by
	Do you operate towed geophysical arrays?	☐ Yes	NA
		☐ No	
	Does the towed array have an STC/LSTC, engineering order		NA
	or other similar certificate or statement describing array	Yes	



specifications and flight test data?	□ N/A	
Is there an Operating Manual for each array?	☐ Yes	NA
	☐ No	
	□ N/A	
Does the Operating manual identify the maximum safe operating airspeed for the	☐ Yes	NA
array?	□ No	
	□ N/A	
Does the Operating Manual contain a parts list and maintenance manual	☐ Yes	NA
containing the critical design specification for all parts and		
elements of the array?	□ N/A	
Does the Operations Manual contain a pre-flight checklist?	☐ Yes	NA
	□ No	



	Does the Operations Manual		NA NA
	contain a schedule for routine preventative maintenance,	Yes	
	recorded inspections and testing?	☐ No	
		□ N/A	
	Is there a procedure in place to ensure that all required	☐ Yes	NA
	maintenance, inspections and testing are up to date prior to	☐ No	
	job start?	□ N/A	
	Is all maintenance performed by a qualified person endorsed	☐ Yes	NA
	by the manufacturer or operator?	☐ No	
		□ N/A	
Towed Geophysical	Has the cable weight and		NA
Arrays – Rotary Wing Aircraft	length been determined by an aeronautical engineer as to	☐ Yes	
	minimize the potential for cable recoil into main and tail rotors following the loss of load?	☐ No	
		□ N/A	
	Is there a weak link incorporated into the load	☐ Yes	
	bearing cable?	☐ No	



	□ N/A	
Is the weak link located as close as possible to the attachment hook of the helicopter?	☐ Yes ☐ No ☐ N/A	NA
Has the breaking strain of the weak link been specified by an aeronautical engineer?	☐ Yes ☐ No ☐ N/A	NA
Is the maximum towed array airspeed and VNE (Velocity Never Exceed) placard placed on the aircraft instrument panel in the Pilot's view?	☐ Yes ☐ No ☐ N/A	NA
Does the cargo hook arrangement allow the pilot to jettison the load without removing his/her hands from the flight controls? Do procedures include the requirement to test the	☐ Yes ☐ No ☐ N/A	NA



	helicopter cargo hook release mechanism?		
Towed Geophysical Arrays – Fixed Wing	Is the aircraft fitted with a shearing mechanism which can cut the tow cable when the array needs to be jettisoned?	☐ Yes ☐ No ☐ N/A	NA
	Does the tow cable have a breaking strain which minimizes damage to the aircraft in the event the array snagged with ground objects?	☐ Yes ☐ No ☐ N/A	NA
	Geophysic	al Survey Flight T	raining
Training and Experience – All Operations	Does your training program contain a syllabus for low level geophysical flight training?	☐ Yes ☐ No	Yes, Pilots have Ag- Ratings
	Does the Pilot training syllabus reflect the IAGSA training guidelines?	☐ Yes ☐ No	Yes
	Are there documented criteria to assess Pilot competency?	☐ Yes ☐ No	Yes



Simulator Training	In addition to the training in the actual aircraft, do pilots, where practical, undergo simulator training in a type specific simulator representing the aircraft being flown on survey? If so, at what frequency?	☐ Always ☐ Sometimes ☐ Never ☐ N/A	Sometimes, with IF & License renewals
	Overwate	r and Offshore Su	ILLYOVC
Minimum			and off shore surveys flown in both fixed wing and
requirements for Over water and Off Shore Surveys	rotary wing aircraft.	appiy to all overwater	and on shore surveys nown in bour fixed wing and
Training – Overwater & Offshore Surveys	Is Underwater Escape Training completed within the preceding three years before undertaking the over water or offshore survey.	☐ Always☐ Sometimes☐ Never	NA
	Are Ditching & Emergency Evacuation Procedures reviewed, crew members thoroughly briefed and simulated training to be conducted at the work site prior to the start of all over water or offshore work. This review should include a review of general emergency procedures that could	☐ Always ☐ Sometimes ☐ Never	NA



Training - Off Shore	potentially lead to a ditching and a discussion on the significance of sea state/wave height on ditching. In addition to the above items, the state is a discussion of the state is a discuss	ne following are to be in	ncluded in offshore training:
Surveys	Does Initial Training consist of a minimum of 10 hours training conducted by a pilot who has a minimum of 100 hours Offshore experience? Does Recurrent Training consist of a minimum of 5	☐ Yes ☐ No	NA NA
	hours training conducted annually by a pilot with the same qualifications as for the initial training: or prior to the start of an Offshore survey if pilot has completed the initial training but has not flown Offshore for more than 90 days?	☐ Yes ☐ No	
	Alternatively, the above experience requirements may be waived if the Operator has in place a competency based training program which includes Offshore operations.		



Type of Aircraft – Over water / Offshore Operations	For an over water/offshore survey in an area with harsh conditions where the odds of surviving a ditching or the exposure that would follow are low then the emphasis must be placed on choosing an aircraft that reduces the probability of a ditching. Whereas, the aircraft criteria may be somewhat less stringent in less harsh conditions where the odds of a successful ditching and rescue are good.		
	For any survey that is over water or offshore in an area where rescue is not likely to occur within an anticipated acceptable exposure time and/or where anticipated sea states would make a successful ditching unlikely, is the use of a multi engine aircraft with performance characteristics such that in the event of an engine failure during an over water survey it can climb from survey height to 500 feet and return to shore or during an offshore survey it can climb from survey height and maintain prolonged flight on the remaining engine(s) to return to a suitable airport at the minimum IFR altitude utilized?	☐ Always ☐ Sometimes ☐ Never	NA NA



	Are single engine piston aircraft used for over water/offshore surveys?	☐ Always☐ Sometimes☐ Never	NA
Aircraft equipment – Offshore	Are aircraft equipped with at least the following gyroscopic instruments, each of which must be independent of the others: 2 x attitude indicator; 2 x heading indicator; 2 x turn and slip indicator or turn coordinator?	☐ Yes ☐ No	NA
	If a second pilot is to be part of the crew, is there a complete second set of basic flight instruments (attitude indicator, gyroscopic heading indicator, turn and slip or turn coordinator airspeed, altimeter, vertical speed) installed at the co-pilot's seating position?	☐ Yes ☐ No	NA NA
	Are there at least two (2) independent power sources to drive the gyroscopic instruments?		NA



- this may mean two vacuum pumps with all air driven gyroscopes or a mixture of air driven and electric gyroscopes provided loss of one power source leaves operational one set of three gyroscopic instruments (attitude, heading and turn rate indicators)	☐ Yes ☐ No	
Is there a radio or radar altimeter with a means of alerting the crew when height above the water falls below a minimum safety height selected by the crew? Is there a means of testing the alerting device prior to flight?	☐ Yes ☐ No	NA
Is there a minimum of one instantaneous vertical speed indicator (IVSI) to provide an instant alert of descent	☐ Yes ☐ No	NA
Do you require the use of weather radar where	Always	NA



	thunderstorms are present or could be expected?	Sometimes Never	
	Are Rotary wing aircraft equipped with floatation aids such as "pop-outs floats"?	Always Sometimes Never	NA
Emergency Equipment – Offshore Surveys	An upper torso restraint system, with a preference for a four point harness, for each crew member	Yes No	NA
	Are aircraft equipped with a 406 MHZ ELT?	Yes No	NA
	Is the crew provided a covered life raft with a self erecting canopy that is equipped with a 406 MHZ ELT and normal emergency survival equipment? Does raft should include an inflatable floor for cold water operations?	Yes No	Yes
	Are constant wear dual chamber life vests that contain		NA



	an ELT aELT/EPIRB, flares and a signal mirror, worn by	Yes			
	each crew member?	☐ No			
	Are immersion/exposure suits worn if water and air	☐ Yes	NA		
	temperatures warrant?	☐ No			
	Are all helmets and headsets fitted with double disconnect	Yes	NA		
	cords?	☐ No			
Weather – Offshore Surveys	Are Offshore survey flights conducted under VMC with minimums of 5 miles visibility and 1000 foot ceiling in the survey area?	☐ Yes ☐ No	NA		
	Is a thorough weather briefing solicited (if available) and does it should include sea state/wave height and wind maximums in the survey area?	☐ Yes ☐ No	NA		
	Additional Training Requirements				
Fire Extinguisher Training	Do all crew members on survey flights, including	☐ Yes	Yes		
	equipment operators, receive annual training in the use of	□ No			



	fire extinguishers in fighting in flight fires?		
Survey Crew Resource Management Training	Is Survey Crew Resource Management training provided to all crew members assigned to survey operations including: geophysicists; pilots; equipment operators; maintenance engineers; field technicians and field support staff at intervals not exceeding three years?	☐ Yes ☐ No	Yes
	Flight Pe	erformance Monito	pring
Performance Monitoring	Is performance parameters, including aircraft speed, height	erformance Monito	oring Sometimes, depending on terrain
	Is performance parameters, including aircraft speed, height above terrain and drape, periodically reviewed using		
	Is performance parameters, including aircraft speed, height above terrain and drape,	☐ Always	
	Is performance parameters, including aircraft speed, height above terrain and drape, periodically reviewed using data collected during surveys? Is the frequency of review such that any discrepancies on	☐ Always ☐ Sometimes	
	Is performance parameters, including aircraft speed, height above terrain and drape, periodically reviewed using data collected during surveys? Is the frequency of review	☐ Always ☐ Sometimes ☐ Never	Sometimes, depending on terrain