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SAFETY AT SEA FOR IATTC AND AIDCP OBSERVERS ON TUNA PURSE-SEINE VESSELS

This document was prepared in response to a request by the Members for an analysis of the cost of implementing the proposal by the United States on the safety of observers at sea (IATTC-90 I-1).

1. BACKGROUND

The initial objectives of the on-board observer program for tuna purse-seine vessels were established during the 34th meeting of the IATTC in June 1977, and the funds for initiating the program became available in 1978. The 1992 La Jolla Agreement, replaced by the Agreement on the International Dolphin Conservation Program (AIDCP) in 1999, increased the observer coverage of vessels with carrying capacities greater than 363 t (Class 6) to 100%. From the beginning of this program, the IATTC staff has considered it highly important that the observer training include a component on safety at sea.

2. ELEMENTS OF SAFETY

AIDCP observer training includes a component on safety at sea, given by certified personnel from the relevant national authority or the International Maritime Organization (IMO). These courses include first aid, techniques for survival at sea, preventing and fighting fires, and personal safety and emergency procedures aboard the vessels in accordance with IMO standards.

In almost all countries, undergoing this training is a requirement for obtaining a seaman's license, without which an observer cannot embark. Until a few years ago, observers were reimbursed for the cost of these courses, which varies between US$ 300 and US$ 500, but, due to the IATTC's precarious financial situation, observers now have to pay for this training themselves.

At sea, the observers depend on the vessel crew for communications, whether by e-mail, radio, or radiotelephone, and there is no protocol for which allows the observer to report confidentially to program staff on land cases of antagonism, interference, harassment, attempted bribery, or other hostile or difficult situations. Observers have instructions to add notes about such cases to their reports at the end of the trip if they consider that doing so during the trip could be risky for their physical or mental well-being, but unfortunately such *a posteriori* reports are not acceptable for some Members.

Therefore, the Commission staff considers that, to be sure that the observer can do his job free from external pressures and in private, an independent communication system is necessary.

The final element to be considered is the situation of the observer falling into the water without the vessel crew realizing. Currently, there are no safety elements in place that would help in finding the observer or helping him to survive in the water. Observer records indicate that, during the last ten years, fishing has been carried out in water temperatures between 13.5°C and 33.6°C. According to the U.S. Coast Guard, even at surface water temperatures of 26°C, the human body can suffer hypothermia after only a few hours, and at temperatures below 15°C, in only two hours.

3. COSTS OF TRAINING AND EQUIPMENT FOR SAFETY AT SEA

3.1. Safety and prevention at sea courses

Initial cost: US$ 300 – 500; renewal/endorsement US$ 200 every five years

As mentioned above, this cost is incurred when the observer is added to the list of qualified observer, and requires renewal or endorsement every five years, at a cost of about US$ 200.

3.1.1. Two-way communication equipment

Costs: Equipment US$ 300; annual operation US$ 600; initial activation US$ 20

The IATTC staff consulted with various observer programs that have implemented similar systems, and in nearly all cases they preferred systems that allowed communication by text and not by satellite voice telephony. The system that seems best suited to the needs of this program is called *InReach SE*: it uses the Iridium satellite system, which allows text messaging with any mobile telephone, as well as geographical location-finding at intervals of from 2 to 10 minutes.

This combination of device and operating plan allows an unlimited number of text messages in both directions. The device is not completely waterproof, but is water-resistant for 30 minutes in 1 meter of water.

3.1.2. Emergency personal indicator locator beacon (EPIBR)

Cost: Equipment US$ 360

This equipment, unlike the previous one, does not allow two-way communication. Its use is limited exclusively to signalling emergencies. When activated by the user, the device transmits a signal by satellite (COMSAT) to a station on land that identifies the device and its location.

The EPIBR that seems best suited to the needs of the AIDCP program and that is used by other observer programs is the *ACR ResQlink 406*. The device is waterproof to 5 m for 1 hour, y has a long-reach stroboscopic light.

Although no there are no hard data on the average life expectancy of these electronic devices, five years would seem to be a good indicator, since that is the life of the battery, which cannot be replaced by the user.

3.1.3. Flotation equipment and man-overboard signalling devices

Cost: Equipment US$ 300

In this category, the IATTC staff reviewed life jackets, typically available on vessels, immersion suits, used in nearly all observer programs, and audible and visible emergency signalling devices (whistles and mirrors).

The cost of waterproof whistles and mirrors is nominal (about US$ 2) and they should be part of the observers' equipment, with no need for further discussion.

The observers of the IATTC program that covers reefer vessels to which fish are transshipped at sea are issued with, in addition to all the equipment listed above, *Imperial 1409 Series* immersion suits, made of neoprene, which provide flotation and increase the time that a person can be in the water without suffering from hypothermia. That program is managed under contract by the *Marine Resources Assessment Group*, and the cost of all this equipment is included in the program budget, and is thus not included in the analyses in this document.

The IATTC staff has no specific recommendations regarding the use of such suits, but their cost is relatively low, and they have a long service life: ten years on average, according to other observer programs.

4. ANALYSIS OF COSTS ASSOCIATED WITH THE SAFETY AT SEA OF IATTC AND AIDCP OBSERVERS

Taking the above considerations into account, and assuming that observers stay with the program for an average of five years, the costs per observer would be:

Cost per observer (US$)	Initial cost	Annual operation	Total first year	Annual cost (inc. replacement/renewal)
Training	500	-	500	100
Location and communication equipment:				
InReach SE	320	600	920	664
ResQ Link	360	-	360	72
Flotation equipment:				
Imperial 1409 Series	300	-	300	30
Total	**1,480**	**600**	**2,080**	**866**

The IATTC staff considers that this equipment should be purchased in sufficient quantities to ensure that all on-board observers have a complete set. This could be done by buying a set for each vessel participating in the AIDCP, or as many sets as are necessary for each observer at sea to have all the equipment at any time. The following table shows the number of vessels, with observers from the IATTC and national programs, that could have been at sea during each month of the last ten years. The staff's recommendation would be to buy 230 sets of equipment, thus ensuring that there will always be some spare sets.

	Mes/Month											
	E/J	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
2006	171	174	197	181	192	195	178	154	157	185	162	94
2007	158	176	196	185	198	199	190	154	166	168	164	92
2008	159	169	187	182	186	188	168	141	143	160	171	131
2009	160	161	196	179	182	186	164	149	149	173	161	87
2010	133	154	180	179	163	169	162	123	144	166	147	77
2011	128	170	193	170	178	187	178	145	141	153	147	76
2012	140	165	204	179	185	195	182	145	151	162	151	72
2013	138	165	196	177	176	193	179	141	162	172	154	72
2014	143	171	193	175	184	188	177	148	170	179	165	98
2015	172	199	223	200	210	195	186	148	174	208	179	83

To give some context, the annual cost of a complete set of equipment and the required training is equivalent to the average cost of a ton of skipjack tuna over the last two years.

The following table shows the total cost of the equipment for the program and the cost per vessel required to carry an observer (*i.e.*, active Class-6 tuna purse-seiners on the IATTC Regional Vessel Register), currently 189. It should be noted that various resolutions, both IATTC and AIDCP, allow or require vessels of smaller capacity classes to carry observers.

It should also be noted that, of the 260 observers currently active in all the programs, most already have their seaman's licence. When calculating the annual costs, it is considered that the cost of initial training is for 25 observers, the average annual intake of new observers, replacing observers leaving the program, and annual renewal for the remaining 235 observers.

Total cost of equipment for the program (US$)	Unit cost	Quantity	Total first year	Annual cost, inc. replacement
Training				
Initial	500	25	12,500	12,500
Endorsement/renewal	200	235	47,000	47,000
Location and communication equipment:				
InReach SE	300	230	69,000	13,800
InReach (activation)	20	230	4,600	920
InReach (annual operation)	600	230	138,000	27,600
ResQ Link	360	230	82,800	16,560
Flotation equipment				
Imperial 1409 Series	300	230	69,000	6,900
Total		**US$**	**422,900**	**125,280**
Cost per vessel (189)		**US$**	**2,238**	**663**