CAPT. DYKES, CCGS QUADRA & G.A.T.E.

An electronic mail was received not too long ago asking if I'd ever sailed with Captain A.A.R. (Randy) Dykes. Funny, but as soon as I read it a sense of melancholy swept over me and in an instant I was being transported back in time to another place far removed from my home here on Canada's west coast.

It's September 24, 1974, and I'm back aboard the CCGS Quadra as First Officer. We had arrived in Dakar at 0830 hours and spent the day at the fueling jetty loading bunkers. It was now early evening and we've just tied up at the French Navy Quay, close aft of the American NOAA vessels "Oceanographer" and "Researcher". The sweltering heat of the day was now dissipating, and along with it the pungent smell of the oil slicked harbour waters.

Our landing in the soft shadows of the evening wasn't the usual slick precision so typical of Captain Dykes. Rather, tonight after we had all but secured the ship, the engines came on strong and we lurched ahead, almost breaking some lines. After finally getting the lines reset and the gangway and safety net rigged, I returned to the bridge and happened to ask the Third Officer, Mr. Daniel Mermoud, what had happened. He said it was just one of those things that'll happen when your trying to do everything right to impress your lady. I smiled. How true. And this was indeed the case for Captain Dykes' wife Margaret had just arrived aboard the ship today (along with Mrs. Hughes, the Purser's wife) and she was apparently sitting in the Captain's bridge chair as he brought CCGS Quadra alongside. Mrs. Dykes reportedly said afterwards to the Captain "it's alright Randy, you can't be perfect all the time". This pleasantness was typical of Mrs. Dykes.

For all of us aboard, nearing the end of a long voyage, it was a pleasure having both of these ladies aboard, as they were both quite beautiful and charming and the rapport they shared with their husbands was infectious, spreading a warmth amongst the entire crew.

But perhaps I should back up here to the start of this voyage and to even earlier times.
I should explain how it is that our ship is in Dakar, capital of Senegal, French West Africa. Further, I should perhaps also clarify that while I sailed under Captain

Dykes, I never really knew the gentleman well. That's the way it is on ships, particularly with captains, who most frequently stand aloof, not unfriendly, but nonetheless separate and apart from everyone else aboard.

During the early 1960's Captain Linggard, Captain Dykes and Captain Nesbitt were the appointed Masters of the CCGS St. Catherines, the CCGS Stonetown and the CCGS St. Stephens, respectively. The three vessels were World War II frigates, subsequently transferred to the Ministry of Transport in the 1950's to perform as weatherships in the North Pacific at 50 degrees North, 145 degrees West. Captain Dykes had replaced Captain Sleight when the latter took the assignment of delivering the CCGS Simon Fraser to Quebec in February of 1963, followed by a year or so service as Marine Superintendent in Victoria prior to his retirement.

In 1966/67 these old weatherships were replaced, and not a moment too soon too, for both the St. Catherines and Stonetown were developing extensive cracks in their hulls during their winter patrols in the North Pacific (the St. Stephen was kept strictly as a standby vessel, but would probably have faired even worse due to her stiffness from laying in berth for such long periods).

The replacement weatherships were fine looking and well-fitted out vessels, but unfortunately, they were ill-suited for the task of station-keeping in the storm tossed waters circumscribed by the 10,000 square mile grid of "Station Papa" in the North Pacific. The main propulsion steam turbine machinery and bailey control systems were far too sophisticated for the kind of operations required of a station-keeping vessel, but this is really the subject of a separate story altogether. It is only mentioned here because in 1974 CCGS Quadra was tasked to an entirely different kind of operation, for which she was extremely well designed and for which she was to win many accolades.

My personal introduction to weatherships was in 1969, when I joined the CCGS Vancouver as Third Officer, the ship then being under the command of Captain John Linggard, another very fine captain and very British, having trained and sailed as an officer with British India Line for a large part of his career. I did a number of weathership patrols over the next few years but they were all aboard the CCGS Vancouver in various capacities. During this time I heard

a lot about the captain of the sister ship, CCGS Quadra, all quite favourable. The comments about Captain Dykes most often heard were things like; e.g., "a hands-on seaman", "a good ship handler", "friendly", etc. I had also heard that he was a Commanding Officer of several of Her Majesty's Canadian Ships during World War II and I looked forward to someday sailing under his command and possibly hearing first-hand of his wartime experiences.

It wasn't to be until 1974 that I got my wish. I joined CCGS Quadra as relief Chief Officer in February 1974 and got to meet with Captain Dykes for the first time. The ship at this time was being fitted with a multiplicity of science equipment and we would also conduct a shakedown cruise in preparation for departure on an extended voyage to the equatorial Atlantic Ocean in mid-May.

The CCGS Quadra was to be the only Canadian ship to participate in an international science venture involving the participation of 39 other ships from 10 different countries. These ships would be working in close coordination with each other and with fixed-wing aircraft and zeppelins. Further, because of the need for highly precise observations and measurements, the first of a new generation of satellites had already been placed in orbit (the first of the Satnav satellites) to augment the more traditional navigation methods.

The purpose of this science venture was several-fold but mainly it was the derivation
of the physical processes of different scales in the atmosphere and ocean responsible for the primary heat engine driving the local and the general circulation of the Earth's atmosphere. It was hoped that an understanding of why the Sahara desert was extending itself ever southward each year and laying waste to much of North Africa's arable land would also be achieved, although it was understood from the outset that it would take years and the use of sophisticated next-generation computers to decipher the information which was to be collected over the coming months.

The project being undertaken was part of the Global Atmospheric Research Program (**GARP**), and specifically it went under the acronym **G.A.T.E.** (GARP ATLANTIC TROPICAL EXPERIMENT). CCGS Quadra and scientists from our own Institute of Ocean Sciences would be playing a key role

both in carrying out specific components of the science program as well undertaking overall coordination of the program in the first and third phases.

On May 09th Mr. Bob Ferguson rejoined the ship as Chief Officer and I then became First Watchkeeping Officer (my appointed position was Master of an "R" Class Cutter but this new assignment would allow the acquisition of my final days of sea time for Master Foreign-Going certification (I required an additional 3 days of sea time in order to qualify for the examinations). The CCGS Vancouver was berthed ahead of us this day and at 1100 hours all of our officers were invited over to the CCGS Vancouver's Officer Lounge where they toasted to our journey. After the "Vancouver" reception we held a retirement party aboard "Quadra" for our retiring Chief Engineer, Sid Perry. This was well attended, with Claude Gourdeau, Chief Engineer of the "Sir James Douglas", providing his typical lively conversation.

On May 10th, and after all loading was completed, the crew had their wives aboard and the officers attended a presentation made to Captain Dykes by several of Victoria's aldermen and the then Mayor of Victoria, the Right Honourable Peter Pollen.

Over the next days the flurry of activity continued, as equipment, supplies and provisions were loaded and last minute alterations and repairs were carried out. On May 15th more sea trials were conducted and on May 16th the Regional Director of Western Region, Mr. Herb Buchanan, was aboard for lunch and discussions with Captain Dykes, along with his invited guests, the Assistant Deputy Minister of Transport Mr. Illing, the District Manager Mr. Slaght, and the Fleet Manager (Captain) John Lewis.

On Friday, May 17th at 1500 hours, and with the Esquimalt Graving Dock pier swarming with officials and the crew's families, amidst waving and the shouting of farewells, CCGS Quadra slipped lines and slowly proceeded outbound to sea. The ship was finally in full readiness for the voyage, although the science group aboard would be continuing to set up equipment while en route. On this voyage, with the inclusion of scientists and additional electronic technicians and radio operators aboard, CCGS Quadra carried a complement of 97 personnel. An additional eight scientists would be joining the ship in Panama.

CCGS Quadra had commenced a voyage of 7,900 miles en route for a position in the intertropical convergence zone of the East Atlantic Ocean where she was to rendezvous with the other ships of the **G.A.T.E.** fleet. The routing included a 4,200 mile leg down to the Panama Canal, a 1,200 mile leg through the Caribbean Sea and past the Lesser Antilles, Grenada and Trinidad, and an approximate 2,500 mile leg across the Atlantic Ocean to an area approximately 350 miles off Africa's Portuguese Guinea coast, where the science program would be carried out.

The first day at sea saw everyone busy settling in, getting their work areas and cabins shipshape, and for many it was a chance to learn more about their ship and it's routines, as well as find their way around easier. The ship's log had been streamed after clearing Victoria and it showed that we were making good time, averaging roughly 14 knots.

On May 19th, the second day at sea, the Purser issued tropical uniforms (navy blue shorts, peaked caps) and it was already warm enough in the afternoon to have them adopted as "uniform of the day". A sounding line was commenced at noon and the continuous sounding line being recorded would be updated with a position fix every half hour over the coming weeks until our arrival at the approaches to Dakar.

On this day the Senior Engineer, Art Anderson, came up and joined me for an hour of my evening watch (1530 – 2000 hrs). With him he'd brought Cuban cigars ($10 each in bond) that we smoked, much to the chagrin of Captain Dykes. Thus was started a routine which was followed every day of the trip, and I always looked forward to Art's company - his cigars (smile), and his conversation about what was happening in his part of the ship. Captain Dykes was very tolerant of the cigar smoke and it was a rare occasion when he would lightly chide us. On our part, so far as practicable we tried keeping our smoking out on the bridge wings.

The morning of May 20th was the start of another beautiful sunny day but even though well off the coast, the San Francisco and Los Angeles smog smeared the atmosphere and reduced visibility, so much so in fact that at "morning sights" the stars disappeared 20 minutes before civil twilight. On a similar note, the science group, who had

been recording CO_2 levels since the start of the voyage, reported the CO_2 reading had gone right off the top of the recorder scale as we approached San Francisco on the 19th and it had remained that way ever since.

May 20th marked the start of "shark watching" for Art and I. We fell into it quite by accident. We were on the port bridge wing with our cigars when we noticed not one but many shark fins cutting the water. We decided it would be interesting to see just how many sharks would pass within a yard of our ship's hull and so we started a count which we then did as ritual from that day forward. I can't remember now just how many sharks would pass that close in say a 10 minute period, but it was a lot! Certainly more than a dozen on occasion!

This is probably a good time to mention something closely related to this business of shark watching. On this voyage, and on a similar voyage made aboard CCGS Simon Fraser in 1963, we came across a tremendous abundance of sea life. From the California coast right down the entire length of Central America and through the Caribbean, sea life abounded. It was an every day occurrence to look out and see dozens of shark fins, the fins of sail fish, turtles, marlin in the air doing their triple leap routines, whales in abundance, and even more pronounced, scores of pods of porpoise and dolphins, with sometimes as many as several hundred dolphins all airborne at the same time! And there was much more, the seas were literally alive with fish and mammals. The funny thing was that although we enjoyed all these sights, we didn't realize that we were watching something that would largely cease to exist. Digressing even further for a moment, this same subject takes me back to a 1967 voyage on the CCGS Estevan steaming north off Cape Calvert into Fitz Hugh Sound with a pink salmon run moving across our course heading into Rivers Inlet. Well, the whole surface of the sea, for miles, was alive, it was a moving mass of wall to wall salmon! The very fact that we were steaming through them meant that we had to be killing scores of them with our propeller blades! Will we ever see that again?

I can say this much. I have made a good many voyages in all these waters since the voyages I mention here, and while I always hope and in fact tell the crew to expect to see lots of marine life, there is astonishing little to see and it is extremely disheartening. I don't know where the blame lies, but I suspect that the apparent loss of so much life can largely be attributed to drift nets and the drift net fishery.

By 2000 hours of May 20th the ship was approximately 80 miles due west of San Diego, and with NW winds of 25 knots driving us forward, the ship's speed was reduced in order to maintain our ETA's.

On May 21st, with the ship now running well off the Mexican Baja Peninsula, the CO_2 level had finally dropped back into recording range. This day marked the start of very warm weather and for the long run ahead little would change. The days would be marked by high temperatures (both air and sea), an abundance of sea and bird life, the occasional passing ship, and the occasional glimpse of the Mexican and Central American coasts.

On May 30th, with the log showing 4,255 miles, the ship was brought up on her anchor off Panama City and the Pacific entrance to the Panama Canal. There were 20 other ships at anchor awaiting passage and a host more on the move to and from the Canal Zone.

Throughout the afternoon the Chief Officer and I assisted the Panamanian surveyors as every nook and cranny in the ship were measured (the Panama Canal transit fee is based on the Panama Canal Tonnage, a special measurement of cubic capacity which the Panamanians insist on measuring themselves – with our help). In the evening eight scientists and five slings of electronic equipment arrived alongside by launch. By 2300 hours all was in readiness to proceed, all we needed was a canal pilot

At 0200 of May 31st, with the pilot aboard and anchor weighed, we commenced our passage through the canal. By 0430 hours we had passed under the Bridge of the Americas and cleared the two SE sets of locks. By 0900 the ship was brought to anchor in Gatun Lake, where she waited for traffic to clear the last set of locks. At 1030 hours, with the locks clear, the ship got under way and by 1300 hours we had anchored up in the harbour of Cristobol/Colon.

> ***For those that might find it interesting, the Pacific entrance to the Panama Canal is actually south and east of the Atlantic entrance. The two sets of locks at the Pacific or Balboa entrance are the Miraflores Locks and the Pedro Miguel Locks. The canal then runs approximately 45 miles in a generally northwest direction up to Gatun Lake, which is 85 feet above sea level. At the Atlantic entrance, Gatun Locks alone lift the ships the full 85 feet to the level of Gatun Lake (the locks have 3 separate chambers). The difference in the sea level height***

of the two oceans is approximately a half inch. However, the Atlantic tide range at Cristobal is a mere 6 inches, whereas the Pacific tide range at Balboa is 23 feet.

At 1830, having learned that no fuel barges were available, the ship was shifted in and berthed at Pier 8. Fueling was commenced almost immediately, while all crew not required got a chance to get ashore and visit in Cristobal and the free port of Colon. **(*The port was dangerous at this time and Americans in particular were persona non gratis. Five of the crew were jumped while ashore and had their wallets stolen, and one of the officers was actually fired on by someone seen furtively darting into and hiding amongst the crowd on a busy street in Cristobal*) .** At 0400 hours, with everyone back aboard and the ship fueled, CCGS Quadra departed the Canal Zone eastbound into the Caribbean Sea.

At 0600 hours of Wednesday, June 05th, the last of the Caribbean Islands, Tobago, was lost from radar behind us and the ship was now on her cross-Atlantic leg. The ship was encountering easterly winds of 24 knots and pitching moderately with a lot of spray and occasional solid water coming over the forecastle.

At 0630 hours of June 13th, with the ship's log showing 8,100 miles, QUADRA arrived at what would be the "Observation Period I" and "Observation Period II" positions for the G.A.T.E. program. After conducting a series of sounding runs to confirm the lay of the bottom, an anchor, mooring and buoy were readied on the after deck (the anchor was actually the wheel off a railway boxcar and the mooring would have an explosimetre attached so that the anchor could be released on completion of the program. The mooring would also have a large number of scientific instruments attached to it for recording phenomena at different depths).

The buoy laying operation went well and at the end of just over 3 hours the buoy was anchored in 15,360 feet of water and all instruments had been successfully attached to the mooring as it had been streamed. On completion of this operation and re-confirming the buoy's position, we sent up a large tethered zeppelin to 5,000 ft. The tether for the zeppelin was also armed with a vast array of altitude-oriented instruments. In addition, we also extended the jib of our forward-mounted Austin Western crane 60 feet out over the ship's stem, and from this jib hung another vast array of instruments set to record a variety of

measurements, all from 3 feet above the sea surface and with some instruments actually in the water itself. It can be correctly surmised from all this that the bridge watchkeepers were kept busy. In addition to monitoring the buoy and other equipment, the ship's position had to be separately confirmed every 20 minutes as these fixes were used to correlate the data being acquired. In addition, every three hours, the quartermasters were required to bring the zeppelin down 500 metres for a met profile, and then pay it out again.

We departed the Observation Period I/II position at 1830 hours of June 15th, after another full day of equipment tests. The sea around us was alive with sharks all day, and as the ship departed in the evening, we steamed right through a large pod of finback whales. We passed about 20 feet off one that may have been 70 – 80 ft. long.

At 1812 hours of Sunday, June 16th, ship's log 8,395 miles, QUADRA arrived in position 13 – 00 North, 21 – 00 West. This was the designated position for the first "intercomparison" and CCGS Quadra was the designated coordinating and "centre reference" ship. As a result, as soon as we arrived on the exact geographical coordinates, other vessels that had already arrived and were waiting for us, immediately moved in to take up station.

The next three days saw all of the GATE vessels engaged in an inter-comparison of their equipment. This involved the ships working in close cooperation, measuring and collating information in real time, each vessel doing a three hour comparison of it's various sea measurements with that of a buoy launched by the FRG (Federal Republic of Germany) vessel "Meteor", and technicians moving between vessels and assisting to resolve technical issues.

I'm not going to go into a lot of detail here about the science that was carried out in the G.A.T.E. program, and the schedule for it, but for those that are curious the following summation, based on my limited knowledge, notes and memory, is offered:

Surface Observations

1. ***Measurement of atmospheric pressure and tendency (to 0.1 mb)***
2. ***Wind direction and speed***
3. ***wet & dry bulb temp., relative humidity***

4. ***Quantity & duration of precipitation***
5. ***Sea surface temperature***
6. ***Visibility, state of the sky, significant weather & special phenomena***
7. ***Height, period and direction of swell (to 0.5 m, 1 second & 5 degrees)***

Radiation Measurements

1. ***Give lower boundary checks for radiation profiles from aircraft & radiometersondes***
2. ***Provide the components of the surface radiation balance***
3. ***Determine bulk values of atmospheric turbidity***
4. ***Determine radiation profiles by balloon instrumentation***
5. ***Determine irradiances of ocean surface, net, total downward, total upward – both short and long wave***

Oceanic Program

A study of the physics involved in the determination of the structure of the upper layer of ocean that interacts with the atmospheric boundary layer, and a study of the structure and dynamics of the ocean currents, with emphasis on the equatorial undercurrent and the coupling of these currents and the atmospheric forcing.

1. ***Surface temperature every 5 miles and every 3 hours, and salinity temp. and depth (STD's) every 3 hours***
2. ***Nanson casts or Rosette Sampler every 3 hours for select depths to 1500 metres***
3. ***XBT-equipped ships to record temperature every 5 miles. CCGS Quadra to tow "batfish" to determine temperature & salinity fields between 0 – 200 metres and to study ocean fronts as well as the spatial structure and development of the mixed layer***
4. ***Waves to be gauged, currents to be profiled and absolute velocity and temperature to be measured to depths of 600 metres. Special surface pitch, roll and current buoys also to be used.***

Location

Along the equatorial belt to 13 degrees north about 500 miles west of Sierra Leone, where the Atlantic Intertropical Convergence Zone exists exclusively during the period of the sun's northern declination.

Schedule (CCGS Quadra)

May 17: ***depart Victoria*** ***May 28 - 30:*** ***in port Panama***

June 17 - 19:	*Intercomparison Period I*	*June 20 - 26:*	*in port Dakar*
June 28 - July 16:	*Observation Period I*	*July 18 - 25:*	*in port Dakar*
July 28 - August 15:	*Observation Period II*		
Aug. 16 - 18:	*Intercomparison Period II*	*Aug. 20 - 25:*	*in port Dakar*
Aug. 26 - 28:	*Batfish tows*		
August 29 - September 19:	*Observation Period III*		
Sept. 21 – 23:	*Intercomparison Period III*	*Sept. 24 - 27:*	*in port Dakar*
October 09:	*Panama Canal transit*	*October 19:*	*San Diego*
October 23:	*arrive Victoria*		

Vessels Participating in the G.A.T.E. Program

Acad. Korolov	**USSR**	**Alm. Saldanha**	**Brazil**
Acad. Kurchatov	**USSR**	**Alex Von Humbolt**	**GDR**
Anton Dohan	**FRG**	**Atlantis II**	**USA**
Bidassoa	**France**	**Capricorn**	**France**
Charcot	**France**	**Charterer**	**UK**
Columbus Iselin	**USA**	**Dallas**	**USA**
Discovery	**UK**	**Endurer**	**UK**
Ernst Krenkel	**USSR**	**Gilliss**	**USA**
Hecla	**UK**	**H.J.Fay**	**USA**
La Perle	**France**	**Marion Dufesne**	**France**
Meteor	**FRG**	**M.Lomonosov**	**USSR**
Musson	**USSR**	**Oceanographer**	**USA**
Onversaagd	**Netherlands**	**Okean**	**USSR**
Passat	**USSR**	**Planet**	**FRG**
Poryv	**USSR**	**Priboy**	**USSR**
Prof. Vize	**USSR**	**Prof. Zubov**	**USSR**
Quadra	**Canada**	**Researcher**	**USA**
Semen Dezhnev	**USSR**	**Sirius**	**Brazil**
Trident	**USA**	**Vanguard**	**USA**
Virgiio Uribe	**Mexico**	**Volna**	**USSR**

One more comment I should make before proceeding further is in reference to CCGS Quadra's assigned electronic technicians. While I remember most, I do not remember all that sailed with us on the GATE program, so I shan't name names. Suffice it is to say that our technicians, some of them long on experience and others relatively fresh out of B.C.I.T., were highly skilled and did consistently high calibre work. This became so widely known that whenever the fleet of ships got close together, that is close enough to swap personnel around, it was guaranteed that at least some of the ships would be asking for one thing above all else, and that is the services of our technicians. The only vessels in the fleet that didn't make such demands were the Soviet ships and the ship from the

German Democratic Republic (also a soviet bloc vessel). With regard to the soviet vessels, it must be remembered that these vessels were all highly sophisticated cold war "snoop" vessels and they were just bristling with antennae of every description. It goes without sailing that they were unlikely to welcome or encourage visits by other nationals. The security on these ships was extremely tight but nevertheless, the soviet officers and sailors were always very friendly to us, in fact it's probably more correct to say "particularly to us".

On June 19th, with the initial "Intercomparison Period I" completed, QUADRA was the last vessel to depart, doing a final calibration of instruments until 0200 hours of the 20th. Although departing late, we overhauled many of the vessels en route to Dakar, and many of the soviet vessels actually slowed until we got by, and then matched our course and speed, allowing us to navigate.

CCGS Quadra arrived in Dakar at 2000 hours of June 20th and tied up at a fuel pier on the north side of the harbour in the industrial section, about 5 km from the city centre. It was a difficult session clearing customs in view that one of our oilers had been fired and he was demanding that the Canadian Consulate represent him in his case against us. This was finally resolved, the ship cleared and the oiler escorted to the airport and put on an airplane. Concurrently we commenced taking on bunkers and fresh water.

At 1000 hours of Friday, June 21st, we shifted to pier 112 right in the heart of the city, obtaining the most accessible berth (to the city) of all the GATE vessels, with the latter being secured, as many as three abreast, at nearby piers. Later in the day, the German ship "Meteor" berthed outboard of "Quadra" and the British ship "Charterer" berthed immediately forward.

The city of Dakar (population in 1974 of 1.2 million) proved to be a fascinating city and everyone fell in love with it. I don't know whether it was a result of the French colonization or just the nature of the Senegalese, but the city was clean, the street plan

well thought out, and the people themselves were so friendly that at first many of us thought we were being “hustled”. This wasn’t the case though, and it didn’t take long to get used of dealing with such good-natured people.

The city was also one of contrasts, with high fashion department stores, an affluent elite, the president’s palace, government buildings and officials on the one hand, and the “seedier” native sections and medina, with clapboard shacks and a “needy” local populace on the other.

Most streets were packed with natives wearing sarongs, many bare breasted, and with their glistening ebony skins contrasting sharply with their colourful garments. And of course there were other contrasts, like the lean muscular youths and comely girls contrasting with the crippled and pock-marked and leprous; the old and feeble with the sparkling, wide-eyed children; and always the wide, chocolate-eyed, warm and friendly looks plus genuine open-mouthed smiles whenever you looked their way. In the case of the young ladies, the eyes and smiles would blend with, but not hide, their bashful pleasure at attracting your attention.

The evenings in Dakar offered excitement for everyone. Exclusive hotels, like the “Terranga”, offered first-class restaurant fare and top billings in their nightclub, with professional performers and dance troupes. Good restaurants, particularly ones featuring French cuisine, abounded. Native restaurants with excellent food were everywhere. It was an experience in itself just walking down the streets in Dakar. The sound of African music with it’s catchy rhythm emanated from around every corner and blended in with the warmth of the evening and the smell of peanuts roasting on open fires on every street. And of course there was the mass of humanity around you, with smiles and laughter and happiness and a feeling that all was well with the world.

Over the several periods that our ships visited Dakar many of the officers and scientists (including myself) managed to get away to neighbouring towns, out on jungle safaris and even to neighbouring countries.

Almost everyone managed to visit the Isle de Goreè, this island being infamous as a holding prison for Africans about to be shipped to the new world as slaves.

On June 27th the GATE vessels departed Dakar outbound for the "Observation Period I" position (where we had laid the buoy). En route as well as on station the science work was the order of the day. Throughout much of "Observation I" the ships worked in coordination with three fixed wing aircraft and the data recorded from these correlated and augmented the data from the ships. In addition, we had two zeppelins tethered off our flight deck, one at 10,000 and one at 5,000 feet, with a multitude of altitude-oriented instrument arrays hanging from both tethers. I shouldn't forget QUADRA's weather radar, which was also extremely useful and being used to record weather events out a distance of 450 nautical miles.

Of course, the oceanographic program was also a priority and it was this aspect of the program that sometimes generated a great deal of collateral interest. In order to view the instrument arrays hanging overside and from the forward crane's jib, we had our outer deck flood lights on throughout the hours of darkness. This resulted in night after night of entertainment, for the lights shining into the water would bring schools of fish of every description up to the surface and into our full view. It was common to have schools of barracuda circling off our ship's side, along with scores of sharks of all sizes and descriptions, turtles, sunfish, eels, sea snakes (although with the latter, once the snakes appeared, everything else would disappear).

It was also interesting to watch shark behavior in relation to the waste thrown off the ship (in the 1970's we used to throw our garbage over the side, contained inside black plastic garbage bags. This is no longer permitted). Some sharks would circle a garbage bag at a fair distance for 3 or 4 times around, and then go in and nudge the bag. Some would then swim away, while others would proceed to nudge the bag some more or simply tear the bag apart and go for the contents. Other sharks, even of the same species, would behave differently. They would spot

the bag, head straight for it and then attack it with such force that it could startle you on the ship if you weren't paying attention. Sharks don't behave all that much differently than seagulls, they will go after anything out of it's element, perhaps it's part of the scavenger instinct. One thing was obvious, and that is that sharks play an important role in keeping the oceans clean.

One evening we had a large pod of pilot whales visit us but they were more interested in the Bonita tuna, and the latter were literally leaping out of the water all around us trying to escape. At sunset the same evening we were visited by a large sunfish that probably weighed over half a ton.

On July 17th the "Observation Period I" program ended and all ships headed north for Dakar.

Our second stay in Dakar was at a berth just one removed to the north from where we were during our first visit. On this occasion, having now completed the first phase and our task as overall coordinator, we were visited by both French and british film crews and on the evening of July 22nd, Captain Dykes hosted a cocktail party attended by the ship's officers and a large number of V.I.P.'s. These included:

His Excellency the Ambassador & Mrs. Rudolph Aggrey (USA)
His Excellency the Ambassador Mr. Denzil Dunnett (UK)
The Chargè D'Affaires & Mrs. Santos Maia (Brazil)
His Excellency the Ambassador & Mrs. Wang Chin-Chuan (China)
The Chargè D'Affaires & Mrs. Roèl Karamat (Netherlands)
His Excellency the Ambassador & Mme. Xavier de la Chevalerie (France)
His Excellency the Ambassador & Mrs. Alexander Török (Germany)
His Excellency the Ambassador & Mrs. Raoul Grenier (Canada)
The Governor of Senegal's Cap Vert Region, Mr. Thieno N'dro & Mme
The Chief of Senegal's Meteorological Services, Mr. Abasse Diouf & Mme
Admiral et Mme Jean Gabriè, Commandant Supèrieur des Forces Françaises
14 ministers of the Senegalese government
19 colonels, captains, commanders, inspectors & directors of the Senegalese Armed Forces

Our remaining days of this stay in Dakar were as interesting and enjoyable as our first stay. It was probably safe to say that overall the city and the GATE vessels were rapidly growing on each other.

On Friday, July 26th, after an impatient wait for our pilot, the captain had us finally slip lines at 0900 hours. The ship was shifted over to Pier 71 and we were fully secured by 1030. It was going to be one of those days though. Fueling never commenced until1230 hours and wasn't completed until after 2200 hours. The captain was so concerned with his ETA at the "Observation Period II" position that he decided to give up waiting for the pilot (who was late again) and departed on his own. By 2230 hours we were outbound through the Dakar breakwater headed for sea and hoping to average 17 knots to get to our station on time.

Ten minutes after midnight, with the ship just 22 miles off the coast, we suffered a complete machinery failure and both boilers had to be closed down (we found out later that the day feed tank had been allowed to run dry - these things happen!). To top it all off, with the total power failure both the computer for the large weather radar and the computer for our new "satnav system" spilled their brains out (both of these systems required a sequential shutdown or they would literally have to be completely re-programmed).

At 0430 hours, (it always took a minimum of 4 hours to get a weathership steam plant back on line after a blackout) we were finally able to start making turns again and shut off the NUC lights. By 0500 hours we were back up to 17 knots.

Over the next 48 hours the electronic techs had reprogrammed both computers, which was no small feat. In the satnav case, the binary code had to be punched out on paper and then fed through the machine in order to install its program intelligence.

A day in the life? Although this is not related to anything in particular, it will give anyone who's interested a real feel for what it was like doing the mate's watch aboard CCGS Quadra while conducting the science program during Observation Period II. The following is taken right out of my own personal log:

> Monday. August 12. 2000 Px. 9-15.0 N., 22-12.0 W.
> Heavy overcast throughout with occasional rain showers. Managed 50% of my pre-calculated morning sights in spite of wx. Haven't been blanked for 9 days now. Fire drill this afternoon. More sharks about the ship, all day.

Morning watch routine:

0400 - 0430: Manoeuvre ship to have STD leading perpendicular down to 500m.

0430 - 0500: Take star azimuth and calculate errors on gyro and standard compass.

0500: Set course & engine speed to close with buoy position (set & drift has been between 0.5 and 1.5 knots).

0500 - 0600: Pre-calculate at least 4 sights for LST 0700-0715 hrs.

0600: Adjust ship's head to wind & stop engines (this is most advantageous for omegasonde releases, particularly if tracked by radar. This is also necessary for tethersonde profiling through 1000 metres of boundary layer, which commences at 0600 hours).

0630: Maintain ship's head to wind and hold position for 0630 hr. STD cast to 500 metres.

0700: Tethersonde profile & STD usually completed at this time, either set course for buoy position or if near enough then allow ship to fall off wind and drift.

0700 - 0715: Morning sights (star altitudes measured).

0715 - 0730: Star intercepts plotted and position worked up on chart. QM's busy scrubbing wheelhouse.

0730 - 0800: Miscellaneous tasks as required: replace barograph paper, course recorder paper, wave recorder paper.

Note*: Throughout the watch collision avoidance is maintained and the ship's position is plotted and logged every hour or less, as dictated by the situation, and on request from the science groups and department heads.

August 13th. The science vessels record the birth of hurricane "Alma".

On August 15th, with Observation Period II completed, we recovered the buoy we had placed some two months previous, but not without some difficulty due to the high winds and seas being created by "Alma".

August 16th marked the start of "Intercomparison Period II", with the USCGC Dallas assigned to the coordinating role. During this Intercomparison, as was the case with all of them, there was a great deal of boat work carried out, as well as the movement of personnel between ships. The soviets seemed to particularly like coming to our vessel and the talk almost invariably got on to the subjects of chess or hockey, two of their favourite pastimes. They were a fine lot and our crew enjoyed the interchange. The crew also found that many of the soviet females were "looking good".

After completion of Intercomparison Period II all vessels once again returned to Dakar for fuel, provisions, equipment and recreation. A review of Phase II and the problems which had ensued (this phase was coordinated by the Americans) led to the decision that Phase III, rather than be coordinated by the soviets, should again be handled by the Canadians, which had done such an excellent job during the first phase (Michael Bolton of IOS had a significant role to play in achieving this success).

The ships left Dakar on August 26th and the final phase was underway. This phase differed from the previous ones because of the intensive oceanographic program involved. This included the towing of "batfish" (torpedo-like probes designed to measure salinity, temperature and depth), the launching of "octoprobes" (measure very minute changes in salinity, temperature and depth), and the launching of a tethered wave-recorder buoy in conjunction with each STD cast, etc.

September 19th marked the last day of Observation Period III (which went very well) and the ships then moved north to carry out the last of the correlations of equipment and data (Intercomparison Period III).

During this phase there was a final flurry of visits between ships and on Sunday, September 22nd, we had 3 Bulgarian scientists aboard from the M/V Ernst Krenkel plus about 20 chess and ping pong players from the M/V Prof. Zubov. We also had a hockey game on the foredeck and a boxing match between two of our largest seamen on the balloon shelter deck. The boxing match became a draw with fat lips and bloody noses, the Russians walloped us at ping pong, and it was a draw at chess.

With our guests still aboard and with our crew all lined up on deck, Captain Dykes conducted a sail-past of all ships at 1900 hours. We dipped our flag and gave three cheers as a salute as we passed very close by each vessel in the array. The captain of the Prof. Zubov, also on board and on our bridge during the sail-past, commented that it was the first time that he'd ever been on a vessel saluting Russian vessels. There were tears in many eyes and lumps in as many throats as the day drew to a close.

The morning of September 23rd broke like the two previous, with absolutely calm seas and a short, smooth, low swell. The vessels of the array were all within 1500 ft. of each other at 0400 hours and their lights cast a shimmering reflection which had a strangely surreal quality. The quietness in QUADRA's wheelhouse was eerie and broken only by the periodic chatter of a soviet on channel 16.

At 0830 hours, I was launched and away in our lifeboat with several crew to pick up one of our scientists off "Oceanographer" as well deliver a present to her captain and the captains of "Planet" and "Ernst Krenkel". At 1100 hours Intercomparison Period III officially ended. As each vessel departed it carried out a sail-past around the others and the cheering and saluting kept up for well over an hour. The soviets departed northbound to fuel at Las Palmas or Gibraltar, while the Americans, the Germans and ourselves set course to take fuel in Dakar.

At daybreak on the morning of September 24th we were approaching Dakar with land looming ahead. This was a welcome sight for some stowaways that had been with us since we last departed this area. And so it was that a small flock took off from our flight deck consisting of two swallows, a dove and a heron. These feathered guests had stowed away in our helicopter hangar for nearly a month, and it was nice to see them survive the ordeal. There were others that hadn't.

At 0830 hours we secured at our assigned fueling berth on the north side of Dakar's harbour and immediately commenced taking bunkers. On completion we then shifted closer in to the city and tied up at the French Navy base, ***which gets us back to where my thoughts were at the beginning of this reflection when I first received the e-mail query concerning Captain Dykes*.**

The next days were busy. Captain Dykes held one last cocktail party, which a newly-appointed Canadian Ambassador, his wife and four children attended, along with many of the dignitaries that had been to our previous functions. Many of the officers and crew had struck up friendships ashore and now it was time to bid "adieu". For most everyone, now was also the time for last minute souvenir shopping and spending the last of everyone's Senegalese francs. Many of the scientists disembarked here as well, particularly those headed for homes in central and

eastern Canada and again, there was the sadness of friends and shipmates saying goodbye.

On Friday, September 27th at 0915 hours we slipped lines, departing Dakar for the last time. Leaving the harbour was an emotional experience for many, including myself, particularly when Captain Dykes sounded three long blasts on our steam whistle. It seemed to be saying "goodbye, God knows if I shall ever see you again, you've been a great town and will bring back many fond memories".

By noon the African coast was out of sight and we were heading almost due west on a great circle course that would take us through the Verde Islands en route to the Caribbean and Panama. The air temperature was 89 degrees and the sea temperature 83.5 degrees. Our log showed 14,113 miles.

On October 01st at 2000 hours our log showed 15,772. The crossing was proving uneventful, with good weather and a 20 knot trade wind (hurricane Gertrude lay 1, 000 miles ahead). In the evening our lady guests held a wine and cheese party for the officers.

At 0730 hours of October 5th we entered the Caribbean Sea, passing through St. Lucia Channel between Martinique and St. Lucia Islands.

On October 09th, at 0000 hours and log 18,077 miles, we arrived at the Atlantic entrance to the Panama Canal. By 0030 hours we had secured and commenced taking bunkers in Cristobal/Colon. At 1600 hours, with fueling completed, the ship got underway and by 2200 hours we were moving through the narrow, mountainous section of the Canal known as Gaillard Cut. The entire canal was well lit with floodlights, with the jungle and it's night noises clearly visible and audible from everywhere on our decks.

Thanksgiving day (October 14th) was celebrated with a buffet dinner. The ship's 2000 position was 16-55.2 N., 100-44.8 W., northbound off the Mexican coast, and the log showed 20,050 miles. The air and sea temperatures today were 86 degrees. We experienced another "green flash" at sunset this evening. This one was spectacular and as green as an emerald.

On October 19th we entered San Diego in the early hours (0300) in dense fog, and after a busy 6 miles up the

entrance channel, we secured at "B" street pier in the heart of downtown. Our berth as it so happened, was directly astern of the "Star of India", a four-masted ship built in 1879 and now on display as a museum piece. After the fog had cleared later in the morning, a new nuclear destroyer and the aircraft carrier "Kittyhawk" stood out in sharp contrast to the "Star of India". After loading sufficient water for our needs, we departed San Diego in mid-afternoon and by 2000 hours we were northbound off Santa Monica.

October 20th. Excerpt from personal log:

> "Northbound off the California coast. Log 22,546. 'Had a beautiful morning watch. At 0500 hours we were running in a white-capped northerly sea under an overcast sky, but the sea was abounding with phosphorus and combined with the whitecaps, gave one the illusion of being in a spaceship, traveling through the heavens at thousands of miles an hour, with the whitecaps depicting brightly shining stars and the many plankton clusters representing nebulae and distant galaxies. The sea was a glimmering brightness, almost hard on the eyes. We passed a whale on our port side who was leaving a magnificent trail of phosphorescence beneath the sea. To top it off, hundreds of porpoise have been chasing our bows and their phosphorescent trails come in from over a half mile out like torpedoes."

Tuesday, October 22nd. 2000 position northbound off Destruction Island, Washington. Log 23,538 miles. We're now Back to temperate zone weather with an air temperature of 53 degrees. Art Anderson was up on my watch, as usual, but tonight as we enjoyed our cigars the talk was subdued. It had been a good trip but a tough one for Art and the other engineers. They had all performed very well though, as evidenced by the ship's performance and the recognition given by others in the GATE fleet.

To the delight of a pier-side crowd of waving family and friends, CCGS Quadra arrived home and secured at the Esquimalt Graving Dock pier at 0900 hours of October 23rd. This completed a 23,795 mile voyage where the vessel had stood out as one highly capable of performing the types of science tasks required of the GATE vessels.

On hand to greet the ship, Captain Dykes and the officers and crew was the then newly-appointed Minister of the Environment, Mme. Jeanne Sauvè. After all was secure, the entire crew was gathered together on the flight deck and Madam Sauvè made a presentation thanking Captain Dykes for his and the crew's efforts in making Canada's contribution to the GATE program so worthwhile.

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R. J. Mellis

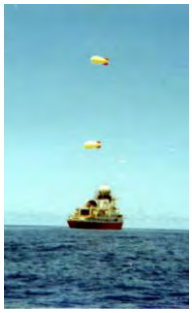
April 29, 2001

Captain Dykes receiving gift from Major Peter Pollen

CCGS Quadra on station -

to be presented to the Major of Dakar, Senegal

Observation Period II



One of many sharks

CCGS Quadra

caught on station

on station

Captain Randy Dykes with 2nd Officer

Soviet G.A.T.E. vessels in Dakar

Paul Charter & 3rd Officer Daniel Mermoud

Act. Regional Director Norman Sigsworth making presentation to Capt, Dykes

Mme. Jeanne Sauvè, Minister of the Environment, making presentation to Captain Dykes on

completion of the GATE voyage, October 23, 1974