RESEARCH VESSEL OPERATORS COUNCIL

1973 ANNUAL MEETING

Transactions of

ANNUAL MEETING

held at

TEXAS A & M MARINE FACILITY

Mitchell Campus

Galveston, Texas

27-28 November 1973

Chairman -

Jonathan Leiby
Woods Hole Oceanographic
Institution

Secretary -

Frank Bean
University of Washington

RESEARCH VESSEL OPERATORS COUNCIL

Annual Meeting 1973

27 - 28 November 1973

Texas A & M Marine Facility
Mitchell Campus
Galveston, Texas

First Day

The meeting was called to order by the Chairman at 0930 hours, 27 November 1973, aboard T/V TEXAS CLIPPER.

List of attendees is appended.

Welcome

Dean E. Letzring, Acting Port Captain, Texas A & M, welcomed the Council to the Mitchell Campus and announced that Louis Newton, Marine Superintendent, had been injured, but was recuperating satisfactorily.

UNOLS Brochures

Capt. Bob Dinsmore, UNOLS, described briefly the brochures which he had prepared for use by members. Contents of these brochures:
1. Admeasurement Convention - "International Convention on Tonnage Measurement of Ships, 1969"
2. Pollution Regulations and Information: Marine Sanitation Devices-Advance Notice of Proposed Rule Making. Fed.Reg. Vol. 38, No. 116, Pt. III, 18 June 1973. Pollution Prevention-Vessels and Oil Transfer Facilities, Fed. Reg. Vol 37, No. 246, Pt II, 21 December 1972. Statement of Capt. G. H. Read, Deputy Chief, Office of Merchant Marine Safety, USCG, before Subcommittee on Oceans and International Environment of the Senate Foreign Relations Committee, March 30, 1973. Letters to Senator Claiborne Pell, Chairman of the Subcommittee. Ship Funding & Costs. UNOLS Activities. Cruise Reports. Foreign Clearances. Ship Scheduling. Coastal Zone Ships. Long Range Ship Plans. Ship Inspection Program. Research Ship Insurance. The Federal Ocean Program, Annual Report of the President to the Congress, April 1973.

International Admeasurement Convention

Mr. Sal Guarino, Halter Marine Services, builders of AGOR 21 and 22, discussed the International Convention on Tonnage Measurement of Ships, 1969.

Purpose of the convention is to simplify admeasurement rules and to standardize them for all martime nations, so that similar sized ships will have similar gross tonnages, in effect closing the loopholes which the past have permitted the building of 'rule beaters', by use of tonnage openings, ballast tanks, etc. Convention comes into effect 24 months after 25 governments, representing 65% of world tonnage, ratify. Convention expected to come into force late 1976 or early 1977.

Convention will apply to all vessels except ships of war, ships less that 79' in length, and ships navigating solely in certain waters, i.e. Great Lakes, St. Lawrence River, Caspian Sea and certain South American rivers. Fishing vessels and research vessels are not excepted. The gross tonnage of these vessels will be doubled or tripled. Tonnage of large vessels will not be substantially changed.

Changes in gross tonnage under the convention may bring vessels whose tonnage is changed thereby under laws, rules and conventions that do not presently apply. Vessels over 200 GT, Officers' Competency Act applies; over 300 GT, Coast Guard Inspection (and therefore manning requirements), over 500 GT, SOLAS applies and over 1500 GT, Radio Operator is required.

We have no advance information on how Coast Guard will apply to the new tonnage rules.

There is a 12-year transition period during which existing vessels will keep their present tonnage. Vessels built in 1975 - old tonnage rules; in 1976 and later, new tonnage rules - with possible application by Coast Guard of existing laws and regulation which are based on gross tonnage. Industry supports the convention, offshore oilwell operators are concerned about Coast Guard application. (See Capt. Read's letter, pp 7 and 8, and industry letters to Sen. Pell).

Max Silverman reviewed briefly the history of the convention and possible application by Coast Guard.

Jon Leiby pointed out that a Public Hearing would have to be held concerning application of the new tonnage rules and that there still remains some time before Congress will pass necessary implementing legislation. We thus have time to present our views.

Sal Guarino suggested that if we agreed with the views of the Offshore Marine Service Association, we support their position. Bob Dinsmore stated that there was no doubt Senate would ratify the convention. Coast Guard will have to prepare suggested implementing legislation for Congressional consideration. We should watch for draft legislation.

Presently manning of GYRE and MOANA WAVE are governed by Titles 33 and 46. Manning is not stipulated by Coast Guard under Inspection Rules. Laws under these titles require lookout, observance of 8-hour rule and Officer's Competency Act. Present manning is three deck officers, three seamen and one licensed engineer. Navy has suggested a second engineer. Cook and ET in crew is at option of operating institution.

Woods Hole Research Vessel Bids

Jon Leiby informed council that of 12 invitations to bid sent out, only two responses were received, only one of which could be considered. This was second invitations sent out, responses to first invitations were all over budget, so specs and plans were revised. New construction costs are high with no prospect of any relief. Sal Guarino spoke briefly of their experience in recent costs for material. Steel had been 5 or 6 cents a pound, but now costs are 10 or 12 cents per pound, and available on black market at 17. 3-inch pipe has increased 120%.

RVOC Position on Application of New Tonnage Rules

Dick Edwards suggested RVOC maintain liaison with industry on tonnage, admeasurement, inspection and manning, particularly in view of the expected ratification

of the Convention, and expected application of new tonnages with respect to manning and inspection by Coast Guard. Bob Dinsmore urged that RVOC get views on record with the Senate Committee. Chairman inquired if he should handle the matter. Dick Edwards demurred, task should be undertaken with other RVOC members assisting. Agreed that the Chairman would get a small ad hoc group together and report back. Group includes Jon Leiby, Chairman, Cliff Buehrens, Ellis Rittenhouse, Boyce Watkins.

Insurance

John Newton discussed briefly the matter of marine insurance for research vessels. Reviewed widely varying insurance requirements due to operating areas, governing laws and regulations, operations with explosives, etc. Introduced Mr. Charles H. Martin, President, Risk Engineering Services.

Mr. Martin discussed marine insurance as such pertains to research vessel and their operating institutions. Had made a preliminary survey, results sketchy, but indicated gaps in coverage and certain insufficiencies in coverage. Responses to survey varied due to factors discussed in his letter to UNOLS (see brochure folder). Complete study of our insurance needs in three phases: Phase I, the survey which has been done, Phase II would be a 'study in depth' to explore strengths and weaknesses of present marine coverage by contacting operators and the institution insurance managers, working through the University Insurance Association. This would require funding, perhaps through UNOLS with institutions paying share. Phase III, implementation would follow, based on conclusions reached during Phase II study and later review by institutions and UNOLS.

Question and answer period followed.

Bob Dinsmore, replying to one question, stated that the insurance study was undertaken in an effort to see if adequate coverage could be attained through group coverage at lower cost, part of overall effort to reduce costs. Study to date has been gratis, downstream it will cost.

Chairman appointed John Newton as chairman of ad hoc committee to study the matter of insurance as discussed and to report back following day a recommended position for RVOC. Members: Boyce Watkins, Pete Branson, Dick Edwards, and Corwith Cramer (ex-officio).

1130-1430 Recess period. Meeting reconvened following inspection of R/V GYRE.

Ship Inspection Program

Dr. Greene discussed the Ship Inspection Program. He stated that Item II 5 was to be omitted (an evaluation of the operating staff). Purpose of the program is to give the funding agencies and reviewing agencies an overall evaluation of the research fleet, and a feel for future maintenance, operating and improvement costs.

Max Silverman reviewed the self-inspection of the past years; stated that new program is a development from the former system, but would be better organized in order to meet the needs of the funding agencies, the objectives of the system.

Dr. Greene continued, saying a Joint Inter-Agency Committee, ONR-NSF, NOAA, had been instituted some two years ago. This, the Ship Operating Cost and Conversion

Committee (SOCC) will be reactivated to conduct inspections, but they will be more thorough, report back, receive input from institutions, and will spend more time on each inspection. UNOLS asks RVOC to review the former inspection procedure, recommend changes, and nominate members of RVOC to inspection teams, who will be NSF consultants.

Jim Gibbons questioned universal applicability of the inspection to all ships, Navy owned, institution owned, uninspected, inspected, classed, etc. Felt there might be some redundancy in view of inspection by regulatory agencies, CG, FCC, and the classification society, ABS.

Max Silverman observed that RVOC could include their desired in the minutes of the meeting, pointed out that inspection would not entail getting a ship underway, no repeat inspection of areas covered by CG, FCC, ABS; expected that inspection team would inspect records of other inspections, but that an 'in house' inspection, as envisaged, could be of great value to funding agencies as such a team can evaluate the scientific capabilities of the ships, weigh the value of proposed improvements, and make recommendations on matters which the agencies need to consider in the budget process, and which are without the purview of the regulatory agencies and ABS.

In response to questions from Dick Edwards, Dr. Greene and Sandra Toye explained the institutions could present their views and recommendations during the critique following the inspection and these could be included in the institution's follow-up report (II 6 of Draft Inspection Procedures). Areas of disagreement would be similarly handled. RVOC's function is to assist in establishing workable inspection procedures and schedules and to furnish members for the inspection team. Both NSF and Adm. Nygren, NOAA, desire input from RVOC for inspection procedures.

Pete Branson inquired as to how the inspections tied in with Equipment Proposals for ship improvements. Sandra Toye replied that NSF knows, generally, the desires of the instituions regarding improvements through letters, telephone calls and personal contacts, but these need to be documented to assist in reaching long range planning decisions. Ship sanitation requirements are an example. Scientists from institutions will judge scientific capability and requirements.

Chairman appointed an ad hoc panel to study this matter and to report to the council the following day: Chairman Bob Sexton, with Pete Branson, Dick Edwards, and Jim Gibbons, members, and Dr. Greene, Bob Dinsmore, and Max Silverman, ex-officio members.

Max Silverman concluded by reminding the council that these inspection panels grew out of the GAO 1969 report to the Congress which severely criticized all academic research ships and recommended to Navy and NSF that formal inspection procedures be established with observers from AEC, NOAA, EPAC.

Fuel Problems

Sandra Toye discussed her investigation into the feasibility of the institutions obtaining fuel from government sources if commercial sources cannot furnish fuel in the quantities and at the places needed by our research ships. (See her Nov. 1973 letter to all institutions). Stressed that there is no easy solution to the fuel problem, particularly that government sources could not be assumed to be readily

available to us. Fuel is handled not by Navy, but by DFSC, based on requirements of entire DOD. We would probably be very low in priority at any given fuel depot or source, such as a contract vendor. Urged that we maintain our commercial sources so far as possible. If fuel were furnished our ships through DFSC, funding would have to be handled at NSF level with corresponding reduction in fuel money granted institutions. Foreign procurements are a real problem due to political considerations. She is continuing work on the problem. Fuel Questionnaire was distributed to members with request that it be turned in to her or mailed in promptly.

Research Vessel Costs and Funding

Bob Dinsmore discussed costs and funding levels amplifying on the information contained in the brochure. ONR may not be as tight as originally thought. No firm figure on level of funding for NSF, being held up by OMB at present. Expected to fall between a "high", a level equal to 1973 level, and a "low", a decrease from 1973 levels. Funds available for Ship Equipment will be low.

Stressed importance of the Ship Utilization Report, it is used to justify funding requests. In this time of tight money, NSF research programs must be supported first, ancillary programs such as AEC, Sea Grant must be given secondary consideration.

Foreign Clearances

Bob Dinsmore spoke to this matter. U.S. may agree to a 200-mile territorial sea zone, abandoning the historical insistence on 12 miles. Ocean areas outside of this zone may come under the control of some international body.

Foreign clearances are requested by use of two forms, the Research Cruise Prospectus and the Foreign Clearance Supplement. Lead times are lengthening. France and most South American countries now require six months' time. State Department generally moves out on requests two months before time research is to start. Countries are tightening and expanding rules and information in clearance requests. Stressed that reports of research conducted in foreign waters must be submitted promptly in order to improve our relations in this area. Reports should be submitted via State Department so that State knows they have been submitted and that the reports get to the proper foreign office.

Meeting recessed at 1645 to meet tomorrow at 0900.

Second Day

Meeting was called to order by the Chairman at 0920, 28 November 1973.

Admeasurement Committee Report

Committee recommended that each institution inform their respective Congressional representatives of our concern with the application of the new tonnage rules by the Coast Guard, i.e., will ships not now inspected come under inspection merely because their tonnage is increased under the new Admeasurement Convention? Basically we have no argument with the tonnage rules set forth in the convention, but we are concerned with increased operating costs if our vessels are brought under regulations that they are not now subject to.

Insurance Committee Report

Committee submitted resolution: Ask each institutional representative to advise UNOLS by 1 February 1974 whether or not they believe an insurance study would be worthwhile. UNOLS to select the best consultant available providing the response is sufficiently affirmative.

Mr. Martin stated that University Insurance Managers favored the study, they were concerned about sufficiency of coverage and costs.

Motion to adopt committee's resolution made and seconded. Motion carried.

Inspection Committee report

Bob Sexton submitted the committee's report:

"1. Recognizing that a well-directed ship material review inspection program system is necessary for good management by Federal program managers and important to the well being of the ship concerned.

"2. Noting that the purpose of ship inspections, which has not been and ought to be defined is:

a. to provide Federal funding agencies with a continuing means for evaluating the physical and material condition of the ships they own and/or fund,

b. to provide information to assist in planning for ship maintenance and replacement, and

c. to provide a means for assisting ship operators through on-scene review and evaluation of ship and maintenance difficulty.

"3. Consider that the inspection procedure is best defined by the check-off form which ought to be an integral part of the inspection definition, and that the existing, previously used form with appropriate modification to reflect the difference between inspected and uninspected vessels is adequate for these purposes.

"4. Consider further that the inspection in regards to time and procedures should reflect the difference between large and small vessels and appropriately between inspected and uninspected vessels and that it should be oriented to make every effort to assist the institution personnel.

"5. Consider further that a copy of the report be made available to the laboratory with an opportunity to respond as appropriate and that no other correspondence is necessary except in extraordinary circumstances.

"6. Recommend that this be transmitted to the Chairman of UNOLS as the stated position of the RVOC."

Discussion followed: Differentiate and define "inspected" and "uninspected" by others. NSF general counsel opinion that the procedures ought not to be termed 'inspections', as that word had legal connotations. The term 'survey' ought to be avoided for similar reasons. Consider possibility of legal and insurance liability consequences of use of these terms and of inspection program itself, whatever it is termed. Reports may be subpoenable and there may also exist individual legal responsibility for findings.

Moved and seconded that committee report be adopted. Carried.

Coastal Zone Research Ship

Tony Inderbitzen, University of Delaware, discussed survey which they had conducted on need and interest in such vessel. Surveyed 140 institutions, about 80 replied. Concensus is that vessel should be 70' to 210' in length, modular in concept for scientific payload, and should be a regional facility. (Further

details in UNOLS brochure). University of Delaware plans to go ahead on their own with private funding. Estimated cost is $1,500,000 with four vans. Design is based on diesel ship, about 20 knots, 2,700 SHP.

R/V GYRE

Dean Letzring described R/V GYRE and discussed operational capabilities. Cost about $3,000,000 with scientific equipment. Beam 36 feet, length 174 feet, 292 gross tons. Depth 15 feet, draft 10½ feet, thus giving a freeboard of about 4½ feet, working area on weather deck is covered with wood gratings about 14 inches above deck, due to wetness. Carries 98,000 gallons of fuel, range 12,000 miles. If ballast used for fuel range probably could be increased to 15,000. Ballast tanks can carry 3,000 gallons. Provisions capacity: dry-45 days, frozen-60 days, reefer-28 days for 25 people. Latter is limiting factor for endurance. Two reefer vans can carry stores outbound, samples on return. GYRE will carry minimum of 2 vans, maximum 6. Operating area: Gulf of Mexico, Carribean Sea and mid-Atlantic.

Ship rode well on delivery trip; acoustically quiet, little vibration. Crew of 11; berths for 10 scientists, eight more could be carried in vans.

High Latitude Research Ship

Don Rosenberg discussed a high latitude research ship, a proposal for which has been submitted to NSF for study. (Copies made available to members.) UNOLS has been asked to consider such ship as a national facility for high latitude studies.

52% of U.S. coastline lies in Alaska and 74% of U.S. continental shelf. Much of area is unnavigable by present ships. CG icebreakers unavailable next summer, and are ships of opportunity at best. If exploration of this area, e.g. for oil, is to be undertaken, the U.S. had better have usable ships. University of Alaska could not use such a ship 100% of the time, so a national facility seems most feasible route. ALPHA HELIX is marginally useful.

A vessel similar to BAIRD and HORIZON is envisaged, but somewhat larger and with more power; ice-strengthened, but ice-breaking capability not needed. Double bottomed to meet Canadian Board of Trade Rules for Zone 7 and ABS. They have looked at a 200 foot geophysical vessel in Vancouver.

In preliminary design now in which RVOC could assist.

Revised Convention on Use of the Sea may give control of much of the area to U.S.; this would render research and exploration of even greater importance.

Woods Hole Ship

Jon Leiby discussed progress, prospects, design concept and bidding on their planned new R/V OCEANUS as replacement for R/V CRAWFORD. (Copy of general arrangement at meeting.)

Design concept calls for engine forward with berthing amidships; labs on upper deck; bridge aft; off center superstructure. Length about 170 feet.

Originally six bidders; bidder capability surveyed by WHOI. Two bids were received, one with back-up material. Bidders were invited to base bid on plans and specs and also to suggest and price alternates.

Peterson bid $3,900,000 with no alternate. Campbell Industries, $4,500,000, on plans and specs, but suggested an alternate based on their large tuna clipper design. Only $2,800,000 in funds available and invitations were withdrawn. New plans and specs were issued, smaller plant, simplified design, one less superstructure deck. Twelve yards invited to bid, five bids rejected, bids received from Peterson, $3,400,000 and Campbell Industries, $4,000,000. Peterson offered a bid of $3,100,000 per ship for two ships. Funds presently impounded by OMB.

Long Range Ship Plans

Bob Dinsmore discussed long range ship plans. Information in brochure. UNOLS working on long range ship needs--1980-1999. In such planning, the needs of science must first be determined and then ship needs derived.

Election of Officers

Jim Gibbons was nominated for secretary. Elected.

Motion made, seconded and carried that Jon Leiby continue in office as Chairman for ensuing year.

1974 Annual Meeting

Ellis Rittenhouse volunteered to host next meeting and suggested that schedule of regular annual meetings be observed.

Motion made, seconded and carried to meet next at OSU in 1974.

Licensed Diesel Engineers

Pete Branson spoke briefly to the problem of obtaining licensed diesel engineers. This always has been a problem but is becoming increasingly serious. Same problem being faced by commercial operators. SIO is also beginning to experience same problem in obtaining mates. People are reluctant to go to sea for the long, uninterrupted periods required by the nature of research vessel operations. Frank Bean concurred in Peter's remarks, stated that although UofW was fairly successful in 1970-1972 in retaining diesel engineers, this year the problem again arose. Pointed that the dearth of licensed diesel engineers was a result of commercial operators some ten years ago insisting on sailing without an oiler, thus leaving a gap in orderly progression from wiper to licensed engineer.

Import-Export Declaration of Scientific Equipment

Discussors scheduled for this item were unable to attend. Matter put over to next meeting.

Status of Sewage and Discharge Regulations

Bob Dinsmore called attention to the "Advance Notice to Proposed Rulemaking" in the brochure. Public Hearing has been held on the proposed rules; CG preparing revised rules. Notice of proposed rule making should be published in December. Many changes are expected and operators should study them. Public Hearing on revised proposed rules may be held in February 1974.

Cost and Cost Control

Frank Bean presented an oral abstract of a paper entitled, "Cost, Cost Accounting and Cost Control", copy attached.

Adjournment

On motion made, seconded and carried, the meeting adjourned at 1230.

Attendees of 1973 RVOC Annual Meeting, Galveston, Texas, 27-28 November 1973.

Don H. Rosenberg	University of Alaska
Charles H. Billings	University of Hawaii
J. F. Campbell	" "
Charles Kelley	" "
John Newton	Duke University
J. E. McCauley	Virginia Institute of Marine Science
Len B. Knight	Skidaway Institute of Oceanography
Peter Branson	Scripps Institute of Oceanography
John B. Watkins, Jr.	University of Washington
Frank Bean	" " (Retired)
Jonathan Leiby	Woods Hole Oceanographic Institution
Dick Edwards	" " " "
Bob Sexton	University of Rhode Island
Cliff Buehrens	" " "
Jay Katz	University of Michigan
Clifford Tezloff	" "
Tony Inderbitzen	University of Delaware
Jim Gibbons	University of Miami
George Flager	Florida State University
Don Mraz	University of Wisconsin, Milwaukie
T. K. Treadwell	Texas A & M University
Dean E. Letzring	" " " "
Ellis Rittenhouse	Oregon State University
Paul Irving	University of Southern California
Gerald Shanley	University of Puerto Rico, Dept. of Marine Sciences Mayaguez, P.R. 00708
AGENCY REPRESENTATIVES	
Dr. Albert G. Greene, Jr.	NFS/OFS
Sandra Toye	NSF/OFS
Joe Bennett	ONR
Max Silverman	NavShips
Ken Popliam	ONR
Bob Dinsmore	UNOLS
OTHER	
Corwith Cramer	S.E.A.
Salvadore J. Guarino	Halter Marine Services
Charles Martin	Risk Engineering Services
M. O. Kinkel	SUSIO

RESEARCH VESSEL OPERATORS' COUNCIL MEMBERSHIP ROSTER, 1973

Institution Representation

University of Alaska	Don H. Rosenberg Institute of Marine Science University of Alaska College, Alaska 99701 (907) 479-7531
University of California, S.D.	Peter Branson Scripps Institution of Oceanography Box 109 La Jolla, Ca 92037 (714) 453-2000, ext. 201
Columbia University	Sid S. Griffin Robert Gerard Lamont-Doherty Geological Observatory Palisades, New York 10964 (914) 359-2900)
Duke University	John G. Newton Larry Spaulding Duke University Marine Laboratory Beaufort, N.C. 28516 (919) 728-2111
Florida State University	George W. Flöger Ed Ball Marine Station Tallahassee, Florida 32304 (904) 599-3385
University of Hawaii	L. I. Knowles, Asst. Director Hawaii Institute of Geophysics 2525 Correa Road Honolulu, Hawaii (808) 944-7154 or 944-8760
Johns Hopkins University	Dr. D. W. Pritchard Chesapeake Bay Institute Baltimore, Md 21218
University of Miami	James Gibbons Institute of Marine & Atmospheric Science 10 Rickenbacker Causeway Miami, Florida (305) 350-7223
University of Michigan	Clifford Tetzloff Jay Katz Great Lakes Research Division 1077 North University Bldg. Ann Arbor, Michigan 48104 (313) 764-2420
University of Puerto Rico	Gerald Shanley Dept. of Marine Sciences Mayaguez, P.R. 00708

Oregon State University	Ellis B. Rittenhouse Oregon State University Corvallis, Oregon 97330 (503) 754-1447
University of Rhode Island	C. A. Buehrens, Marine Supt. Graduate School of Oceanography University of Rhode Island Kingston, Rhode Island 02881 (401) 792-6203
University of Southern California	Paul F. Irving, Supr., Ship Operations Alan Hancock Foundation USC Marine Facility 2949 Miner St. San Pedro, Ca 90730 (213) 833-4221
Stanford University	J. Brooks Bowhay Hopkins Marine Station Pacific Grove, Ca 93940 (408) 373-0464
University of Texas	John H. Thompson, Jr. Marine Science Institute University of Texas Port Aransas, Texas 78373 (512) 749-6760
Texas A & M University	Lewis Newton Texas A & M Research Foundation Building 311, Fort Crockett Galveston, Texas 77550 (713) 744-3604
Virginia Institute of Marine Sciences	Dr. William J. Hargis, Director Gloucester Point, Va 23062
University of Washington	Francis T. Bean, Marine Supt. Dept. of Oceanography University of Washington Seattle, Wa 98195 (206) 543-5062
University of Wisconsin-Milwaukee	Don Mraz Center for Great Lakes Studies University of Wisconsin-Milwaukee Milwaukee, Wisc. 53201 (414) 963-4196
Woods Hole Oceanographic Institution	Jon Leiby R. S. Edwards Woods Hole Oceanographic Institution Woods Hole, Mass. 02543 (617) 548-1400

Agency Representation

U.S. Naval Ship System Command	Max Silverman Gary Jayne Room 319, 1101 15th St. N.W. Washington, D.C. 20360 (202) 692-3710
Office of the Oceanographer of the Navy	Office of the Oceanographer of the Navy The Madison Building 732 N. Washington Street Alexandria, Va 22314
UNOLS	Robert P. Dinsmore, Executive Secretary, UNOLS Woods Hole Oceanographic Institution Woods Hole, Mass. 02543

COSTS, COST ACCOUNTING AND COST CONTROL

a paper presented at the
1973 Annual Meeting
of the

RESEARCH VESSEL OPERATORS COUNCIL

Texas A & M Marine Facility
Mitchell Campus, Galveston, Texas

27-28 November 1973

by

Frank Bean

COSTS, COST ACCOUNTING AND COST CONTROL

This paper is based on my personal experiences in the wonderland of budgets and costs during my all-too-brief period of service with the Department of Oceanography of the University of Washington. The views expressed are my own and not those of the organization to which, until lately, I belonged.

Cost as a factor in business management is seldom considered in the abstract--nearly always in relation to some other factor: can a given cost be met; can it be recovered; does worth balance or exceed cost; can a cost be better used for something else? Translated into business terms, the cost of a thing--be it inventory, plant, wages, or money--must be considered with respect to current net operating balance, cash flow, return on investment and market forecasts.

It is unfortunately but also historically true, that "costs" and their management come under the scrutiny of top management in business and officials in government only when they get so far out of hand as to threaten corporate existence or, in the case of government, a budget is exceeded or jeopardized.

There are innumerable examples. I cite two business examples that are classics and still studied.

General Motors in 1919 went through a financial blood-bath that a year later resulted in the resignation of William C. Durant as president. He lost control of the company he organized through failure to monitor control over capital spending and levels of inventory. The duPonts were brought in to rescue the company and to lend their not inconsiderable abilities in financial management.

GM went through another cost crisis in 1924--this one caused by a failure to keep informed of the market by monitoring dealers' inventories with consequent over-production. This situation had quite an effect on cash flow. Alfred P. Sloan, who had succeeded Pierre S. duPont as president the previous fall, detected trouble in March 1924: sales had declined 4%, yet the division managers had production scheduled 50% higher. Mr. Sloan personally checked dealers' inventories on a trip in May 1924 and flatly ordered a production cut-back. At that time, as now, GM division managers scheduled their own production, but corporate controls

had not been set up. Mr. Sloan was subsequently taken to task by the GM Finance Committee.

The second business classic which I cite is Consolidated Aircraft's 880, by many considered the best of the early jets in design, in engineering, in acquisition cost and in operating costs. Very briefly, management at the San Diego plant had no idea what development costs were and still less what production costs were. When one of the cost engineers documented that Consolidated's payments to their vendors exceeded the selling price of the plane, he was fired for his pains. The result of all this was that by the time General Dynamics headquarters in New York woke up to what was happening, it was too late in the day. The airlines liked the 880 and wanted it, but they could not wait for Consolidated and GD to straighten out their financial problems and turned necessarily to the Douglas DC8 and the Boeing 720. The 880 didn't miss the market--the market moved on past.

There is no need to cite government examples--we are all familiar with the C5A, Navy shipbuilding programs, highway construction and other examples too numerous to mention.

I cite these cases as classic examples of the troubles that ensue when current costs are not known and when future developments affecting cost management are neither foreseen nor considered.

Though we, as the managers of research vessels, may not be considered to be businessmen, we must manage costs in the same way and to the same extent that successful businessmen do. We have a service to sell: seagoing platforms for oceanographic research; we have a market: oceanographers; we have costs: salaries, repairs, equipment, overhauls, indirect costs, etc.; and we have income: grants and contracts. These factors define a business. So, in a sense, we are running a business, but, admittedly, one with some unbusinesslike peculiarities.

A short comparison will illustrate: If a company thinks they might make some money by selling their newly developed Mark II Widget, they will conduct a market survey and arrive at a market forecast; they will calculate production costs; add "G and A" costs, and profit and contingency; determine a break-even point, set a

selling price and schedule production. If they do all their home work properly, have made some astute guesses, if their business intuition be good and if nothing goes wrong, they will make a profit and their banks and stockholders will be happy. But if any one thing goes wrong, or if their home work was sloppy, the company will suffer a loss in marketing the Mark II Widget. The result will be at best a loss write-off and a fall back on operating reserves to stay in business; at worst, a call on their bankers or underwriters, or even bankruptcy.

The point of this comparison is that businesses are permitted to make a profit, which can be distributed as dividends or carried forward to operating reserve. If they incur a loss it is covered out of operating reserve or by going to the money market. For a while at least. This is an over-simplification, but it is sufficient and not inaccurate.

How do we compare to businesses? We make a market survey: how many days or hours will our ships be used by scientists? This market survey or forecast is made, really, by our customers, the scientists, and despite the care and thought that goes into the process, our market must be considered largely unpredictable. We estimate costs based on proposed use, and if we have done our homework properly and everything falls into place, we will come out within and close to budget and the operating forecast will be fulfilled.

If, at the end of the year, we are too far under budget, our colleagues--and we ourselves--will be unhappy, because we might, in hindsight, have spent money to some worthwhile purpose on our ships; if we end the year over budget, we are in real trouble. In short, we may be in a business, but it is a peculiar business for three reasons: we have an unpredictable market, we are not permitted to make a profit, and we had better not operate at a loss.

So much for some classic business examples and what I believe is a not-too-inapt comparison between our business and business in general.

I believe there are three major areas or trouble spots in the budgeting, funding, accounting and cost control function. Overlapping fiscal years, fiscal

accounting by institution accounting departments and the lead time required to accomplish capital improvements in our ships.

I am not sure that I know the answers to these problems. I can but suggest some possible solutions.

The funding agencies, particularly NSF, are, I think, moving toward a solution of the problem or awkwardness of overlapping fiscal years by awarding accelerations to ship operating grants, rather than strict annual grants; ONR contracts have, so far as I understand matters, given us some leeway by the nature of their continuing contracts. The overlapping of the NSF year and the ONR year ought to be eliminated if at all possible. But to get real relief in this area, the matter of operating deficits and surpluses must be considered. If a deficit shows up at the end of a given period, much turmoil and anguish ensues. I think deficits really ought to be recognized as apt to occur if budgets are realistic. You simply cannot come out with a zero balance every time. At the end of a given accounting period, the bottom line is going to show a surplus--profit, or a deficit--loss. These ought to be carried forward to the next accounting period. Deficits could be made up out of the following year's operating budget, or in justified cases, liquidated by an acceleration. Surpluses could be set off by corresponding reductions in ensuing years' grants or contracts. The point is that deficits and surpluses ought to be recognized for what they are and be permitted to show on the budgets submitted to the funding agencies. They are a fact of business life and they are with us.

Once this be permitted, perhaps we can make use of a pre-determined rate: charging for ship use at a fixed rate about equal to that which we show as "operating cost per day" on the operating budgets we submit to NSF. This will eliminate the re-charge juggling that follows an approved audit, and would give us a workable method of handling deficits and surpluses: the pre-determined rate could be adjusted upwards or downwards to offset any deficit or surplus occurring in the previous year.

I do not foresee any easy or immediate solution to the leadtime problem associated with capital improvements. Capital improvements are always subject--and properly so-- to a searching scrutiny. Once a need is foreseen there must follow preliminary technical and cost feasibility studies, vendors' brochures obtained, preliminary designs prepared and cost estimates made, and finally a budget submitted--a once-a-year occurrence. Following approval and grant award, production drawings must be completed, regulatory and agency approval obtained, invitations to bid sent out, and finally, and hopefully, the improvement is accomplished. In the case of improvements that are scientific in nature, many scientists don't care to wait that long, and we, as ship operators, find this leadtime annoying. It can amount to as long as two years. However, capital improvements, by their nature, must be carefully considered and evaluated and care takes time.

Mr. Sloan had this to say about evaluating capital improvements, "Five principles are to be satisfied:

a. Is the project a logical or necessary one considered as a commercial venture?

b. Has the project been properly developed technically?

c. Is the project proper, considering the interest of the corporation as a whole?

d. What is the relative value of the project to the corporation as compared with other projects under consideration....".

These are valid criteria to be applied to any capital spending project. Based on this year's NSF Guidelines for Ship Equipment Proposals, NSF has moved in this direction. I think it would be better if capital spending for ship improvements were budgeted and funded separately for improvements that are strictly scientific in nature, for once the latter are installed, repair and maintenance become a cost charge against ship operations.

In speaking of financial controls generally, Mr. Sloan stated: "In the beginning many limitations in our method were evident. The reports, for example, were not usable for evaluation and comparison until they were set up on a uniform and consistent basis. Uniformity is essential to financial control, since without it comparisons

are difficult if not impossible. One of the immediate tasks, therefore, was to strengthen the accounting organization, both centrally and within the divisions and to institute standard accounting practices throughout the divisions."

Having again cited Mr. Sloan, let me turn to our accounting reports, budget format and cost reporting. These are necessary parts of the cost control process, for only when we know what the costs are, what they should be, their nature and purpose, can we hope to exercise control.

Here, of course, my remarks are based entirely on the systems at the University of Washington. I daresay that the University of Washington is not unique, for when I proudly showed my self-imposed pencil and paper cost accounting and reporting system to Dr. Greene he gently laid it down and sadly remarked, "Yes, I know. I had to do the same thing at the University of Georgia."

The Grant and Contract Accounting office at the University of Washington issues a "Budget Status Report" monthly. This shows outstanding obligations, expenditures, unencumbered balance, etc. Costs are coded to categories which may or may not have some relation to reality. These various categories are, I believe, imposed by state regulation.

Another characteristic of these BSRs is that expenditures in each accounting code are totaled over time back to the ONR contract start date, in our case, 1 November 1969. Annual costs for a given year or current costs to date must be determined by the tried and true but also time consuming pencil and paper method at the Principal Investigator's level.

The accounting codes are in some instances meaningful and usable, in other cases not. Food, POL, telephone, employee benefits and indirect costs can be taken directly from the BSR and related to line items in the budget submitted to NSF, but for the majority of the budget line items, the cost must be determined, apportioned and related to line items at the operating level, i.e. by the Marine

Operations office. This has been done by use of a cost coding and reporting system instituted by the Marine Superintendent in late 1971. The difficulty here is that the BSR shows not what the expenditure was for, other than by an often irrelevant accounting code, but to whom the money was paid.

For example, we submit several "Requests for Requisitions", a local form, for such items as galley supplies, paint for the mate, tools for the engineers and some machinery repair parts. These items are often consolidated on a single purchase order, by which they are identified on the BSR, and will show up on the BSR as a single obligation initially, but eventually expenditures will show up as payments are made to individual vendors and all under accounting code 03-99, Supplies. Advance payments to agents show up as payments to a local bank, arbitrarily split between 03-99 (Supplies) and 05-99 (Contractual Services) and the accounting promptly drops out of the report. The actual expenditures, as you all well know, can fall under nearly any line item except salaries and indirect cost: fuel, travel, repairs, food, medical services, port expenses, etc. Memory and a reference to the purchase order help in identifying costs to line items, but it is a time-consuming process. In the case of agents' billings, their summary of charges eases the task.

Even salary and overtime costs as shown on the BSR must be analyzed, due in part to the University's method of paying crew salaries. Base pay is shown under one accounting code and paid on the last working day of the month and shown on that month's BSR. Our 15% sea pay, the first eight hours of overtime on Saturdays and Sundays, and all other overtime is paid on the 12th of the month following and appears on that month's BSR, all under one accounting code. This does not give us the salary information we need: sea pay and the first eight hours on Saturdays and Sundays are functions of the ship's operating schedule and hence not subject to immediate control. We really need to know how the extra overtime is running so it can be monitored and controlled. These salary breakouts can be identified but it is a laborious task.

A solution? There is at least one solution to every problem, often more than one. The solution selected must be a reasonable one from the standpoint of effort and cost and it must give timely results. This is a problem that by its nature is one of information handling and in approaching problems of such nature, one immediately considers the use of computers.

The cost accounting codes we have been using in Marine Operations at the University of Washington are such that cost data, once coded, can be programmed for computer print-outs of monthly cost reports, showing monthly costs, costs to date, budget allocations and balances available. Downstream, ship use time could be introduced and current operating cost rates computed and charges summarized to the various funding budgets. A copy of cost codes which we were considering earlier this year is appended.

As a first step in resolving some of the problems I have discussed, I propose:

1. That NSF change the budget line item designations from the current Roman numeral, alphabet letter, Arabic numeral designation to a three Arabic numeral designation.
2. That institutions be required to establish an accounting system that will relate costs directly to NSF ship operating budget line items.
3. That NSF establish definitions of line items so that costs attributed to line items will be the same for each institution.
4. That the present line item, "Overhaul" be changed to "Scheduled Repairs", which would include not only overhauls, but also any repairs regularly scheduled and accomplished during other than overhaul periods, such as during a turn-around period; and that an additional line item, "Unscheduled Repairs" be added.
5. That "Normal Maintenance", "Scheduled Repairs", and "Unscheduled Repairs" be broken out to the third level: Deck, Engineering, Ship Electronics, Steward and Scientific Systems.
6. That "Steward Supplies" be eliminated and "Stores and Minor Equipment" be broken out to the third level, as above.
7. That "Travel" be broken out to "Scheduled Rotation", "Unscheduled Replacement"

"Medical Evacuation".

8. That fourth level breakouts be reserved for use by institutions. Fourth level "8", for example, could be used to identify unexpected, and therefore unbudgeted costs--such as port expenses for an unscheduled port call; fourth level "9" could be used to identify reimbursable costs, such as for hospitalization, repatriation and salary expenses covered by insurance; or for agents' charges that are reimbursable from an investigator's budget.

9. That accrual accounting be required.

10. That Fleet Support costs be separately budgeted and allocated to ship operating costs on the Budget Summary.

There are various ways of identifying costs as discussed previously. Generally costs are identified by their nature: salary, overtime, freight and express, etc., but I do not believe this is a totally valid method of cost identification. We need to look at the purpose of the cost. For example, the total effort in effecting an unscheduled repair can entail cost of repair parts, commercial labor, overtime by our engineers, telephone calls and freight and express. Should the costs of the repairreally be distributed in such manner? Or should they be coded to "Unscheduled Repairs"?-and perhaps fourth-leveled to the system or equipment repaired? I pose this as a question. The answer, if indeed there be one, and if needed or wanted, is in the future. But we would do well to start considering the purpose of a cost, not alone its nature.

Another area of cost concern is that of comparative ship operating costs. We have all heard the oft quoted remark, "Comparisons are odious". Perhaps they are; they are also necessary. UNOLS and NSF have an unenviable task in arriving at valid comparisons. They have done remarkably well, given the diversity of research ships. In some cases we probably are comparing apples and oranges, at least to some extent. This is unavoidable. Direct comparisons even between the AGORs may not be entirely valid for several reasons: schedules, the nature of scientific

work, differing personnel regulations, Union contracts, installed equipment, the institutional organization, etc. Significant variances between line item costs for the various AGORs can probably be identified and accounted for. Certainly, if Scripps establishes salaries for the WASHINGTON crew that differ from salaries established for the THOMPSON crew--which incidentally are set, not by the University, but by the State Higher Education Personnel Board--there will be a variance in salary costs, over which the operator has little control. But the variance can be identified.

One step that could be taken is to identify the cost of operating and maintaining the ship separately from costs directly attributable to the ship's scientific systems and equipment. For example, WASHINGTON still carries the Deep Sea Anchoring and Coring Winch; THOMPSON does not. THOMPSON still has the stern A-frame; WASHINGTON does not. The cost of maintaining these scientific equipments are borne by the ship operating budget, and the costs differ. The point is that AGORs are different and have differing operating costs.

Cannot a basic AGOR and her equipment be defined and the scientific equipment peculiar to a given AGOR identified and accounted for separately? Perhaps even to the extent of crew overtime necessitated by scientific requirements, and even the extra cost of food which depends on the size of the scientific party? Here, be it noted, I am speaking of the purpose of a cost--not its nature.

Study may well show that many of the foregoing suggestions are unworkable or not worth the effort. Certainly we must avoid promoting a bookkeeping nightmare. We must be careful to expend effort, time and money only when the results are clearly worth the expenditure.

We as ship operators are faced with a real problem in cost control: level or slowly rising levels of funding and rapidly rising costs in nearly all areas: salaries, fuel and food particularly. Increases in other areas have already been experienced, and they will increase in some areas precipitously. We are not going to be able to hold these costs level and maintain the past tempo of operations. We can spot trouble areas and maintain some control, but only if we know the purpose of our

expenditures, their magnitude, and can get timely, meaningful and relevant cost data on an accrual basis for comparison with line item target allocations.

References: "My Years With General Motors", Alfred P. Sloan, Jr.
Doubleday and Co. 1963. Library of Congress Card No. 64-11306
pp 120, 130-131, 143.

"Corporations in Crisis", The Editors of Fortune
Doubleday and Co. 1963. Library of Congress Card No. 63-20800
pp 63-96

Annex: Sample cost codes.

(APR 1973)

MARINE OPERATIONS COST CODE

MAJOR SHIP

111 Base
112 Sea Pay
113 WEOT
114 XOT
115 Security
116 Stu Help
110 Salaries

120 Benefits

100 Total Salaries

211 Deck
212 Engineer
213 Comm & Elex.
214 Nav
215 Steward
216 Science
210 Maintenance

221 Deck
222 Engineer
223 Comm & Elex.
224 Nav
225 Steward
226 Science
220 Overhaul

200 Mtce & Operations

311 Fuel
312 Lube
313 Misc
310 POL

320 Food

331 Vessel
332 Personnel
333 Liab & P.D.
330 Insurance

340 Utilities

351 Deck
352 Engineer
353 Comm. & Electronics
354 Navigation
355 Medical
356 Science
350 Stores & Eqpt.

360 Steward Supplies

370 Trvl/Per Diem

381 Outport
382 Comm
383 Morale/Welfare
384 Med Services
385
386 Ships Business
387 Frt & Exp
388 Dockside Assist.
389 Other Misc.
380 Miscellaneous

510 Computer
520 DAS
530 STD/CTD
540 Radar & DF
550 Winch Readouts
560 NavSat
570 Depth & Prof.
580
590 Portable & Misc.

500 Scientific Systems

600 Technicians

710 Crew Indirect

SMALL VESSEL

111 Base
112 Sea Pay
113 WEOT
114 XOT
110 Salaries

120 Benefits

100 Total Salaries

210 Maint.
220 Overhaul
200 Mtce. & Overhaul

310 POL

320 Food

331 Vessel
332 Personnel
333 Liab. & P.D.
330 Insurance

340 Utilities

350 Stores & Eqpt.

360 Steward Supplies

370 Travel & P.D.

381 Outport
382 Communications
387 Freight & Exp.
388 Dockside Assist.
389 Other Misc.
380 Miscellaneous

500 Scientific Systems

710 Crew Indirect

FLEET SUPPORT

810 Base
820 Benefits
800 Salaries

411 Secretarial
412 Purch.Services
413 Truck Trans
414 Matl.Handling
415 Waterfront
416 Computer Services
417 Reprod & Carto.
418 Office Supplies
419 Miscellaneous
410 Eqpt.Supps,Services

420 Travel & Per Diem

430 Communications

400 Shore Support

720 Staff Indirect