UNCLASSIFIED

FIGURE 2 **TAURUS**

a new generation submersible from International Hydrodynamics Company Ltd. (HYCO)

Following on the success of the world renowned PISCES series of work submersibles, HYCO now introduces TAURUS with a much expanded capability. TAURUS offers:

- DRY TRANSFER INTO SUBSEA CHAMBERS
- DIVER LOCK-OUT
- TWO TON PAYLOAD
- UP TO 2,000 FT. WORKING DEPTH
- SUBMARINE RESCUE CAPABILITY

Aimed mainly at the offshore petroleum industry but also having military uses TAURUS is the result of more than three years work by HYCO's design and manufacturing organization which has built thirteen submersibles to date, all of which are presently operational. Seven of these submersibles are based in the North Sea offshore area. The reliability and advanced design of HYCO's vessels is a result of feedback from HYCO's wholly owned operating subsidiaries HYCO SUBSEA INC. of Houston, Texas, and HYCO SUBSEA LTD. of Vancouver, B.C. Canada. The HYCO group is the only organization of its kind that operates a service using its own designed and built submersibles.

Characteristics of the TAURUS series are as follows:

LENGTH	34 ft. max.
BEAM	13 ft. max.—reducible to 8'6" for shipping.
HEIGHT	12 ft. max.—reducible to 8'6" for shipping.
WEIGHT (dry)	53,000 lb. max.—reducible to 45,000 lbs. for shipping.
WORKING DEPTH	2,000 ft. (max.); 1,100 ft. (min.) dependent on type of steel used in hulls.
VIEWPORTS (External)	One 36" I.D. forward. Five ports in tower with 5" I.D. One lower aft in command chamber 6" I.D.
HATCH DIAMETER	Tower Entry—24.32" Bulkhead—27" Dry Transfer (double hatches)—38" major dia.; 35.5" minor dia.
SPEED	3 knots plus—depends on quantity of externally mounted payload.
CREW	Pilots—1; Co-Pilots—1 (a relief crew can be accommodated)
LIFE SUPPORT	Normal—500 man hours
BATTERY CAPACITY	1,000 amp. hrs. (8 hr. rate) Lead Acid
CARRYING CAPACITY	4,000 lb. distributed between personnel, equipment, etc.
GAS CARRYING CAPACITY	12,000 Std. Cub. ft. at 2,100 p.s.i. (available for diving mixtures).
DROP WEIGHT	1,000 lb. (movable for fore and aft trim).
PROPULSION	2—5 h.p. thrusters trainable port and starboard. 2—5 h.p. thrusters trainable vert. up and down. 1—5 h.p. bow thruster trainable in horizontal.
MANIPULATORS	Supplied to customer's requirements (normal 2).
CERTIFICATION	American Bureau of Shipping (A.B.S.) (or to special order).
AVAILABILITY	For sale or charter (customer training available).

TAURUS service can be offered through HYCO SUBSEA companies.

Your enquiries are invited. Please contact–

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HYCO Subsea Inc.
1800 WEST SAM HOUSTON
SUITE C-7, HOUSTON,
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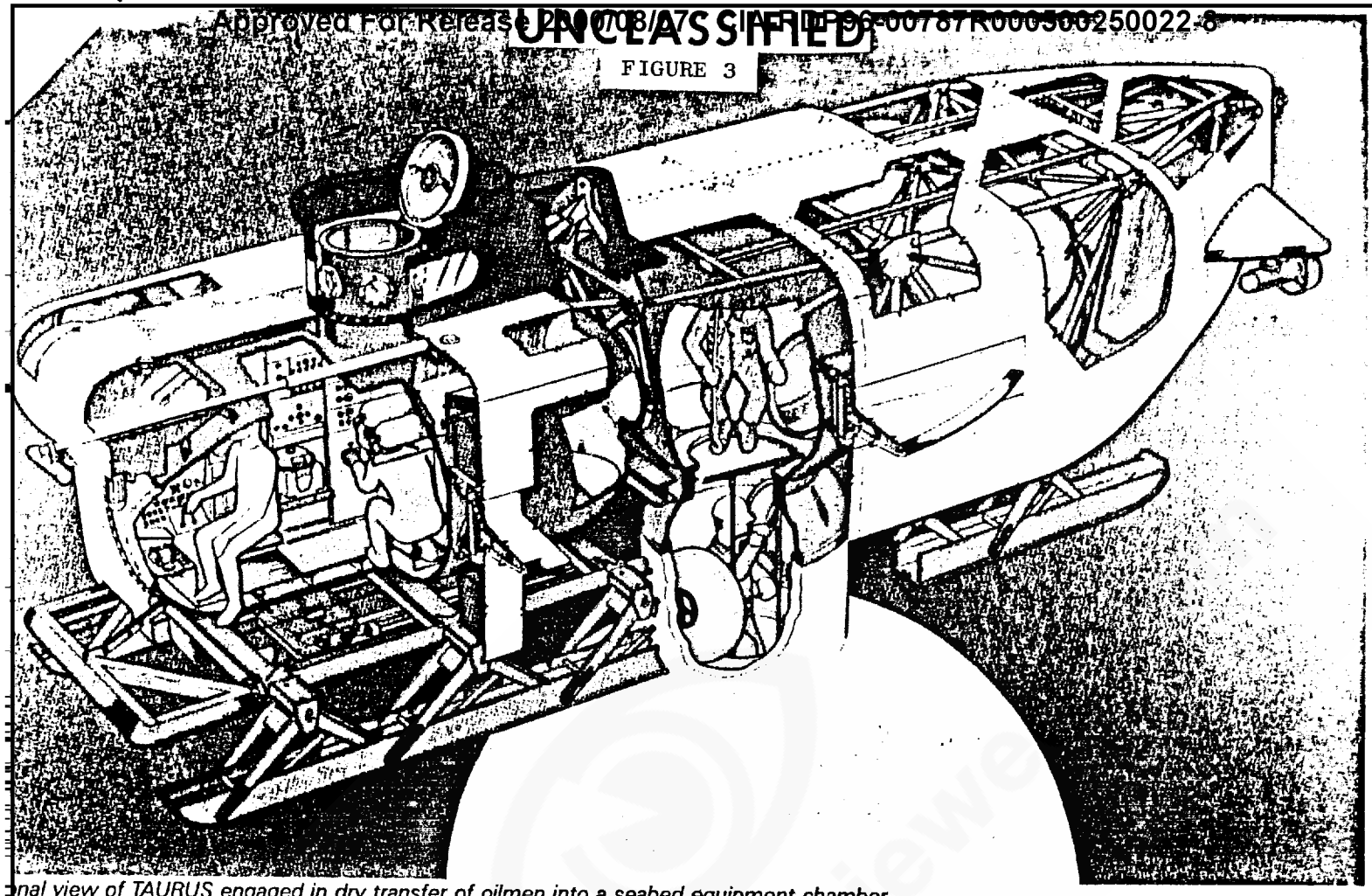
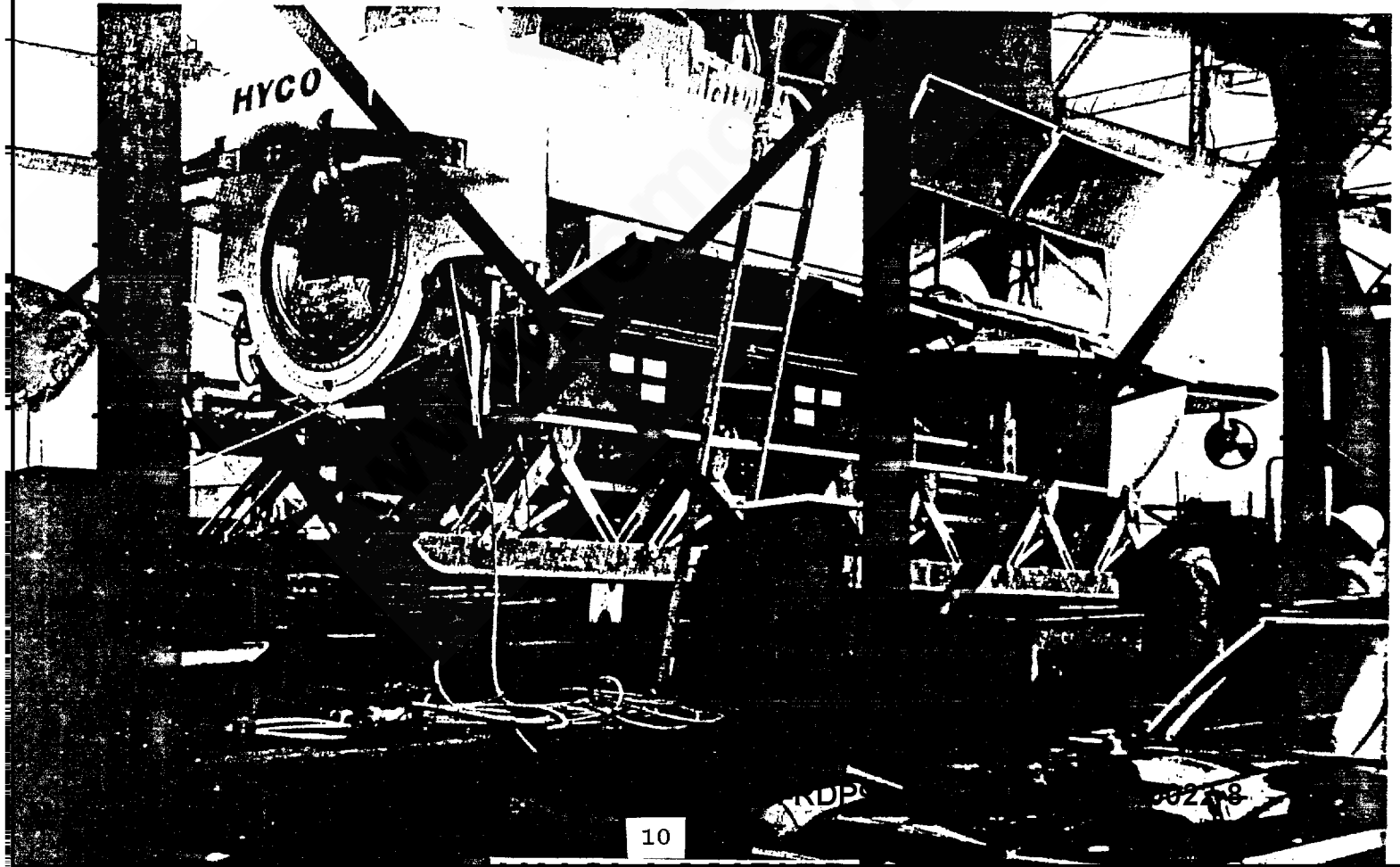
Phone: (713) 688-6382

FIGURE 3



nal view of TAURUS engaged in dry transfer of oilmen into a seabed equipment chamber.



Just prior to diving, the 31 target envelopes were given to the pilot of the submersible, who was not otherwise associated with the experiments. When the craft was at the working depth of 170 m, the pilot used a single die to choose six of the 31 envelopes to be used as the targets for the run. Both subjects (on separate dives) were asked to register their impressions verbally (tape recorded) and in drawings of the target location. At the end of each series of six targets, the taped responses were sealed collectively into large envelopes for later judging.

5. Experiment (2)--Communications to a Submersible

The undersea communications experiments utilized the remote viewing phenomenon as an information carrier by preassigning a specific message to each of a set of six possible remote viewing targets. (Table 1 shows the message set.) In this protocol, to send a message an outbound team goes at a prearranged time to the site associated with a particular message and remains there for 15 minutes. Using the normal remote viewing protocol, the subject on the submersible is asked to register his impressions as to where the outbound team may be. At the conclusion of the sending period, the subject is then asked to choose from the target set the one that best matches his description. Having done so, the code book, which contains the target-message code relationship, is consulted to determine the message.

Table 1

MESSAGE SET

Code	Message
001	Remain submerged for two days
010	Evasive plan six
011	Rendezvous at pickup point three
100	Proceed to base one
101	Standby alert on priority targets
110	Launch priority targets

Four trials were planned in accordance with a prearranged time schedule. The first trial aborted because the submersible did not follow its diving schedule. For the second trial, subject H1 made an effort to determine the message by identifying the corresponding site. At the appointed time when the submersible was at a depth of 170 m, in water 340 m deep, H1 was asked to describe his impressions of the location of the outbound team. (The outbound team had chosen their location to designate the particular message to be sent.) Having completed the response, the subject was handed the list of target descriptions and asked to choose which of the six target locations appeared to

match the description. Once the judging was accomplished, the code number associated with the target was used to obtain the corresponding message from the code book. Figure 4 shows the subject's response. The outbound team was in fact hiding under a large oak tree shown in the figure. The subject correctly (and extensively) described a large tree, and also correctly indicated that the experimenters were "cavorting about" in and near the tree, also correctly describing a drop-off behind the outbound team. In this experiment the subject correctly judged the target and was able to choose the correct message from the code book, "Rendezvous at Pickup Point Three."

For the third trial, also at a depth of 170 m, subject I1 visualized what appeared to be a grocery store, and therefore could not choose from among the possibilities in the target list, none of which contained this possibility.

For the fourth trial, the outbound team went at a pre-arranged time to one of six possible locations, chosen from a new list. In this trial (with subject I1) the submersible was on the bottom in 80 m of water. Figure 5 shows the subject's response to the target, a shopping center. The subject correctly indicated the flat stone flooring, small pool, reddish stone walk, and people walking around in an enclosed space. When shown the target list, the subject chose the correct target and was able to "receive" the codebook message, "Launch Priority Targets."

6. Experiment (3)--Coordinate Remote Viewing of Soviet Targets from a Submersible

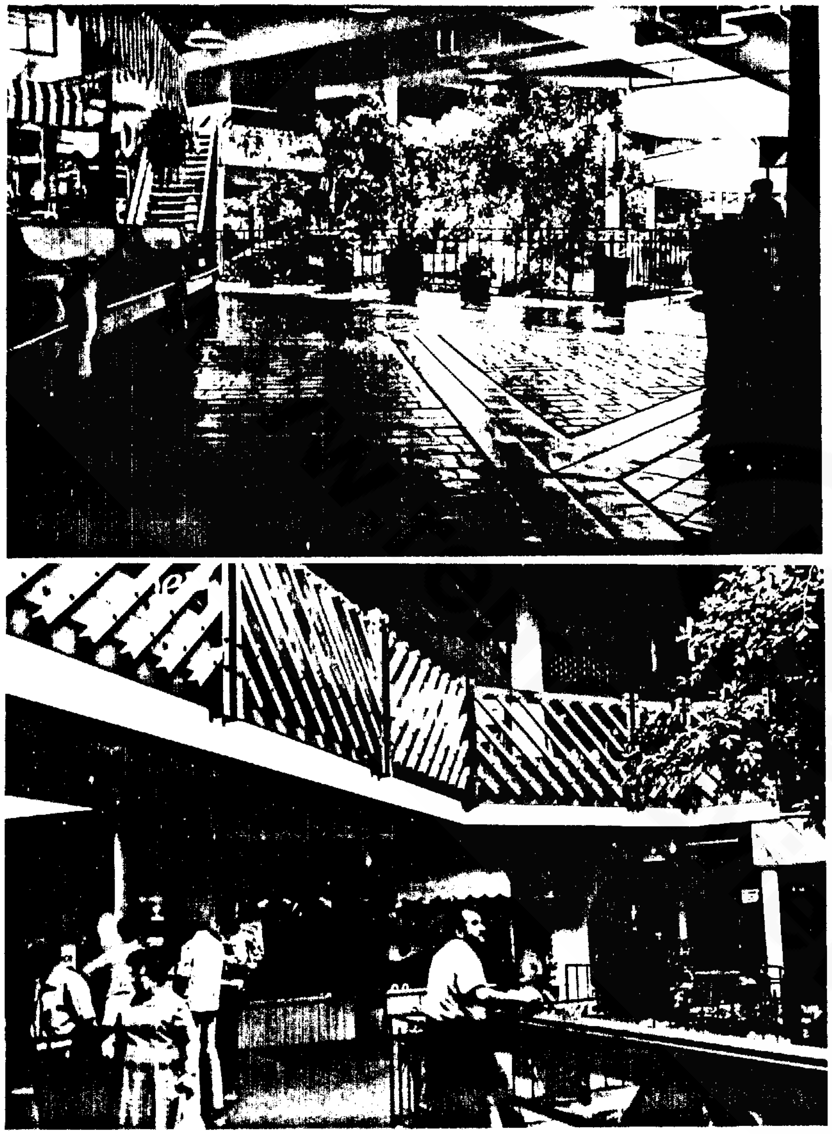
On the basis of a sealed set of coordinates prepared by the sponsor's technical representative, subject I1, while submerged at a depth of 170 m, targeted on a Soviet site and rendered a description (tape recorded verbal response and drawings). The material was subsequently turned over to the sponsor for evaluation.

7. Preliminary Conclusions with Regard to Submersible Experiments

- Remote viewing appears to be a successful mediator for a land/submersible communication link.
- The attenuation (at 10 Hz) is 18.7 dB at 170 m [see Figure 1(a)], to which must be added the air-surface reflection loss. Under the least-loss case (near-grazing TM wave), the air-surface interface adds another 6.7 dB [Figures 1(d), 1(e), Eq. (1)]. The results are therefore suggestive that electromagnetic radiation may not be the mechanism of remote viewing. However, a definitive test requires a series of experiments carried out at, say, 1000 m, where 10 Hz attenuation is 110 dB.

FIGURE 4

SUB EXPERIMENT NUMBER I: 500 FEET IN 1000 FEET OF WATER. 16 JULY 1977 TARGET WAS A GIANT OAK ON HILLTOP IN PORTOLA VALLEY, CALIFORNIA. SUBJECT'S FIRST WORDS WERE OF "A VERY TALL LOOMING OBJECT." "A VERY, VERY, HUGE TALL TREE AND A LOT OF SPACE BEHIND THEM. THERE ALMOST FEELS LIKE THERE IS A DROP-OFF OR PALISADE BEHIND THEM."



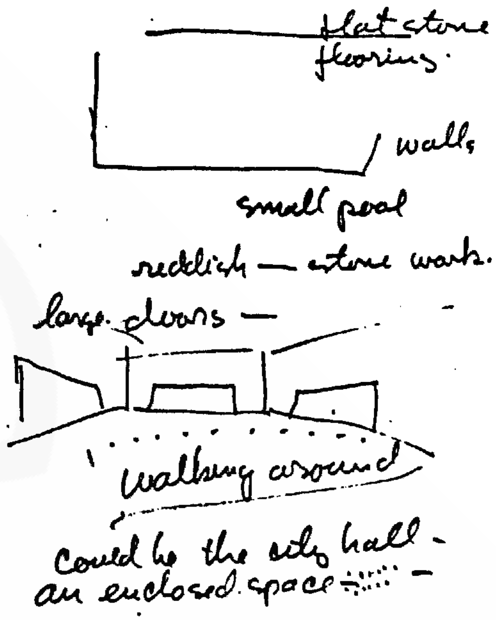


FIGURE 5 SUB EXPERIMENT NUMBER 2: 250 FEET OF WATER, ON THE BOTTOM. 17 JULY 1977. TARGET WAS THE OLD MILL SHOPPING CENTER, MOUNTAIN VIEW, CALIFORNIA. SUBJECT'S DRAWING CORRECTLY IDENTIFIES: "FLAT STONE FLOORING, WALLS, SMALL POND, REDDISH STONE WALK, LARGE DOORS, WALKING AROUND AN ENCLOSED SPACE."

B. Picture Communication Experiments

In the underwater experiments just described, we obtained evidence that it is possible to transmit a message to a distant person by coding the message to correspond to one of several preselected remote locations that may be visited by an outbound experimenter who is to send a message.

In this second set of experiments we are investigating the extent to which a message can be communicated by the use of a picture target instead of a remote geographical location. The first step in this investigation is to determine whether a subject can reliably perceive a designated picture in a distant location. If the subject is able to describe meaningfully the target picture, then he will be asked to select the target picture from one of several in a codebook, as in the underwater experiments.

In our preliminary trials, a subject (D1) was asked to describe each night his impressions of a target picture left in a designated location. These experiments have now been carried out at distances up to three thousand km, with encouraging results. The results of the first three trials are as follows.

The first target picture chosen by the experimenters was a photograph of the Cheops pyramid in Egypt. The subject described a square building in a dry place. He felt that his arms and hands were being bandaged, and his head and face also. He thought of the word "mummy." The second picture was a painting of a gorilla looking out of a window. The subject described seeing a disfigured black man, with his face cut in half by something (the window frame). The third picture shows fishing boats on a Mexican lake. The main elements of the subject's description were "seafood" and "the ocean."

These pilot experiments were sufficiently encouraging that a formal series of experiments is planned for the following month in which message transmission will be attempted.

C. Soviet Target Remote Viewing

The sponsor's technical representative presented to Subject I1 the coordinates of four Soviet sites; the subject while in our laboratory produced descriptions of these sites via the remote viewing process. The results have been delivered to and are being evaluated by the sponsor.

III FINANCIAL STATUS

The expenditures are as shown in Figure 6. The program is on schedule and sufficient funds and subject commitments remain to meet the objectives of the program.

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