

## [Text]

with most ice conditions, nevertheless they inevitably will get stuck sooner or later. I do not think you can build for 100 per cent ability to cope with ice conditions in the Arctic. If you do, then I think you go away beyond the point of diminishing returns in the cost of the vessel. Then you have a vessel that is so costly both to amortize and to operate that you would not make any money out of it.

What the percentage of conditions is I do not know. One talks about being able to cope with 90 per cent of ice conditions and if the balance of 10 per cent they cannot be avoided by good ice reconnaissance and routing and that kind of thing, this is maybe the situation where some sort of rescue capacity will be needed. But be that as it may, Humble Oil always envisages the necessity for having icebreakers present as a rescue capability.

Let me go back just a moment to this business of the capability of a ship to cope with ice on its own. In both the first and second *Manhattan* trials, when she was accompanied by one of our icebreakers, conditions were such that we were quite sure neither the *Manhattan* nor the icebreaker could have done it on their own. The fact that two of them were there made the thing possible and practical and they were never in any serious trouble at all. However, there were times when the vast mass and momentum of the tanker enabled the icebreaker to move and when she got stuck then always conditions were such that the icebreaker had a relatively open area to start from and could take a bash at the ice regime that had stopped the tanker. So in those extreme conditions, two ships can manage but one cannot. There will always be, as I said, conditions, I think, when a vessel of this kind, however powerful and however designed to cope with ice conditions, on her own, may get stuck.

Translating that into our own conditions, let us remember that the Eastern Arctic, where the only known extractable major source of minerals, the Baffinland iron ore, is located, is a lot easier to deal with than the through passage, a lot easier. So you probably do not need nearly as big nor as powerful carriers to deal with the Baffinland iron ore, in fact you certainly do not need nearly as big nor as powerful carriers to deal with that for an extended season as you would for a year round through passage carrying oil from the West to the East.

It is really a far more practical proposition both for the size of the ship you need to get the stuff out and for the kind of support this might need. I suppose, in fact I know, that the Baffinland iron ore plans are an industrial secret. We do not know much about it but we do know they have been doing their homework. I do not know what size of ship they are contemplating to move, the kind of tonnage they feel they must move for this thing to be economically viable, but it is bound to be a good deal less, a great deal less, I would suggest, than the Humble Oil tankers, particularly if Baffinland are prepared to stockpile, say, in Newfoundland or southern Greenland and only operate, perhaps, on a shuffle for seven, eight or nine months of the year and just skip the worst part—January, February, March and April.

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Would these ships be able to operate entirely on their own without any kind of icebreaker support? I think they would be expected to deal with most conditions on their own and any icebreaker support would be regarded as a

## [Interpretation]

tions des glaces. On parle de 90 p. 100 de chances sûres de réussite sans avarie, mais on peut combler les 10 p. 100 qui restent par des mesures sérieuses qui diminuent encore les risques, La *Humble Oil* envisage la nécessité d'avoir des brise-glace sur place pour aider en cas de besoin.

Revenons-en aux possibilités d'un navire à faire face à la glace par ses propres moyens. Lors des deux essais du pétrolier «*Manhattan*», où celui-ci était escorté d'un de nos brise-glace, les conditions étaient telles, que nous étions sûrs que ni le *Manhattan* ni les brise-glace ne pouvaient effectuer la traversée seuls, mais la traversée a pourtant été effectuée puisqu'il n'y a pas eu de difficultés véritables. A quelques reprises, les deux bateaux se sont entraînés, ce qui veut dire que dans des conditions extrêmement dures, deux bateaux peuvent passer. Il y a toujours des conditions où un navire de ce genre, quelle que soit sa puissance, quelle que soit sa conception pour faire face à la glace restera pris quelque part.

Ayons toujours à l'esprit qu'il est bien plus facile d'extraire les minerais qui se trouvent dans l'Arctique de l'Est, région où est située la «*Baffinland Iron Ore*» que d'essayer de traverser l'Arctique d'un bout à l'autre. Par conséquent, il n'est peut-être pas nécessaire que la *Baffin Iron Ore* ait des navires aussi puissants que ceux dont on se servirait durant toute l'année dans d'autres régions de l'Arctique.

Il s'agit d'une proposition beaucoup plus facile d'application aussi bien quant à la taille du navire que quant à l'appui qu'il faudrait. Je sais que les plans de la *Baffin Iron Ore* sont des secrets industriels. Je ne sais pas quelle sera la taille des navires dont ils veulent se servir mais je proposerais que les pétroliers de la *Humble Oil* emmagasinent à Terre-Neuve ou au Groeland du Sud et ne naviguent que pendant 7, 8 ou neuf mois par année.

power, creates tremendous momentum which is very hard to stop. But once stopped they are very hard to get moving again.

This kind of ship in order to cope with these conditions is of such strength that I think the risk of ice damage can be ignored. The experience of the *Manhattan* was that on the strengthened parts of the ship there was no sign of the damage of any kind whatsoever in any of her trials. The damage she did receive was in those parts of the ship where they had not thought there was going to be any impact and where they had not put the old mill steel hull plating.

to make an accurate estimate of the strength of these ships. However, there is a margin of safety in the way they were designed and built because the whole body of the ship is strengthened under movement. A ship can be carried by a mill and will in a different way. It could be carried out of the water. They are very deep ships and so deep that they could be carried out of the water into shallow water or even onto rock where they could be ground and then be damaged with a minimum of effort.

Ces navires, vont-ils être capables de se déplacer sans l'aide d'un brise-glace? Je crois que l'on s'attend à ce qu'ils affrontent la plupart des conditions de navigation tout seuls, et que l'intervention d'un brise-glace serait