

Dear Friend,

I hope this email finds you well.

At the end of November last year, Japan submitted to the Australian government its proposal for Australia's future submarine program.

I am confident that the Japanese proposal is both low risk and meets Australia's needs. This is because our proposal is based on our accumulated experience and the proven technologies of the Soryu-class submarine, which is the world's largest conventionally powered submarine and seven of which are already in use by the Japanese Maritime Self Defence Force.

However, several questions have been posed about whether our proposal will be able to meet Australia's future submarine needs based on erroneous information related to the specifications and capabilities of the Soryu-class submarine.

Unfortunately, as the Soryu-class submarine incorporates the very latest technology, I am not at liberty to make public the details of its capabilities. I would, however, like to explain to the greatest extent possible the truth about the capability of the Soryu-class and the reasons why the Japanese proposal is low risk.

1. Can Japan's proposal meet Australia's requirement on cruising range?

Firstly, I would like to address the concern that the Soryu-class submarine will not be able to match Australia's requirements regarding cruising range. This concern is obviously mistaken, for in Japan's pre-concept design, every effort was made to ensure that Australia's requirements for its cruising range would be met.

More specifically, given that cruising range can be determined by the quantity of fuel and fuel consumption efficiency, the Soryu-class submarine was the basis of a

comprehensive study on an internal layout made in order to ensure effective use of space by extending the hull and re-designing partitions. This study led to the conclusion that by increasing the capacity of the fuel tank and working on its positioning as well as extending the hull design, the pre-concept design will be able to meet Australia's future submarine requirements for its cruising range without any problems.

## 2. A question of narrowness in the internal space of the Soryu-class submarine

Secondly, there is a concern about the space inside the submarine. The size of the reserve buoyancy compared to submarines from other countries and the double hull structure led to questions about whether the internal space of the submarine is overly narrow.

The estimated surfaced displacement of the Soryu-class submarine is approximately 3,600 tonnes, while its dived displacement is around 4,200 tonnes. What this means is that, in relation to the reserve buoyancy of the Soryu-class submarine, there is no reason for saying that it possesses an excessive amount of reserve buoyancy compared to submarines of other nations.

Moreover, although it is true that one section of the Soryu-class submarine consists of a double hull structure, a highly space-efficient outfitting using 3D digital mock-up technology and design techniques that prevent reinforcement structures such as beams from restricting space have created a wide internal space while avoiding a growth in the size of the submarine itself. Furthermore, the extension of the hull has allowed a much wider internal space than in the Soryu-class submarine.

The internal space of the Soryu-class submarine has been shown to a large number of Australians who are familiar with the internal space of the Collins-class submarine, and so far, we haven't received any comments indicating that the internal space of the

Soryu-class is narrow.

### 3. Too short a lifespan?

Thirdly, there is a concern that the lifespan of Japanese submarines is short when compared to those of Australia.

Until recently, Japanese submarines were used for a period of 18 years before being retired. The operational lifespan of the submarines was determined by the National Defence Program Guideline (NDPG) taking into consideration factors such as not exceeding the pre-set number of submarines to be retained by Japan (originally 16), technical obsolescence, and the introduction of new submarines incorporating technical improvements.

However, Japan decided that it would increase its submarine fleet to 22 vessels based on the NDPG for 2007, and thus a decision was made to extend the service life of the submarines by 6 years.

As you may have already deduced, it is not true to say that Japanese submarines cannot endure for long periods of time. If the Royal Australian Navy desires to use the submarines over a long period of time, the same level of technological checks that we carry out on our own vessels now will enable these desires to be met.

Moreover, while some indicate that the double hull structure is the source of the submarine's shorter lifespan by corrosion, this is simply not true. Since the Soryu-class submarine is constructed in sections, this allows for an appropriate level of anticorrosive maintenance. As proof of this, Japan has never had an incident whereby a major fault has interfered in the operation of its submarines.

These appropriate anticorrosive technologies were developed for our submarines in order

to operate even in harsh warm water environments conducive to corrosion. Hence we believe that this will guarantee the effectiveness of Australian submarines that will also operate in the same maritime temperature environment.

#### 4. Is AIP necessary?

Fourth, there is a concern that since modern submarines are required to spend long periods of time submerged and to secretly evacuate to safer waters, AIP (Air Independent Propulsion) capability is indispensable and yet it is not included in the Japanese proposal.

To say the conclusion first, as a result of incorporating lithium-ion batteries into our submarines that surpass the capabilities of AIP, Japan does not believe that AIP is an indispensable capability for modern submarines.

Japan has had experience in operating seven submarines with AIP systems installed in them. However, after considering the evolution in lithium-ion battery technology (higher energy density, greater safety, faster recharging times) Japan made a decision not to install AIP systems on submarines to be built from 2015 onwards. The new Soryu-class submarine will use lithium-ion batteries instead of AIP as this technology has led to improvements in submerged endurance and speed capabilities, thereby allowing operators to continuously traverse waters using a wider range of possible speed options from low to high speed that simply aren't available to AIP.

We therefore believe that this new Japanese technology will provide a capability that exceeds that of AIP.

#### 5. Are lithium-ion batteries reliable?

Fifth, there is a concern that lithium-ion battery technology is not yet sufficiently

developed to use in submarines.

Japan made a decision to install lithium-ion batteries on any submarines to be built from 2015 onwards. Prior to their installation in submarines, our batteries have undergone vigorous and complete verification testing. They have been thoroughly evaluated in over twenty different types of tests, and no issue has been found concerning their reliability. These tests include short-circuit tests, shock-resistance tests, drop tests, overcharging/over-discharging tests, seawater soaking tests and heat tests. The results of these tests clearly demonstrate that reliability is not an issue. With this assurance, we finally decided to install lithium-ion batteries in our own new submarines.

#### 6. A Special Strategic Partnership between our countries

Very recently an argument has emerged in Australia suggesting that although Japan's bid has emphasised its strategic advantages, there is an inordinate risk that deepening defence and security cooperation with Japan would narrow Australia's strategic flexibility and pose a strategic risk to Australia. Yet is a point of view that regards Japan as a source of strategic risk for Australia really all that correct? Japan and Australia share values of democracy, human rights, the rule of law, open markets and free trade, and we have a special strategic partnership based on our mutual strategic interests.

Moreover, Australia and a large number of other nations have welcomed the more pro-active contribution Japan will make to the peace, stability and prosperity of both the region and the world in line with Japan's "Positive Contribution to Peace" based on the principle of international co-operation. It is in this context that one should regard the deepening of security and defence co-operation between Japan and Australia.

As has been the case for many years now, Japan and Australia have been deepening our

security and defence cooperation based on our past 2+2 discussions and agreements. The recent Defence White Paper of the Australian Government also endorsed the strengthening of security and defence cooperation between Japan and Australia. Our participation in the CEP for the future submarine program is just one part of a much wider and more diverse story. If we were to follow the logic of the argument, which is based on opposition to Japan and Australia deepening our defence and security cooperation, we can only simply say “why?”

Furthermore, Japan regards Australia as a trusted partner which is why it concluded an agreement with Australia concerning the transfer of defence equipment and technology. Under assurances given by Australia based on the agreement, necessary technology will be transferred from Japan to Australia in the event that Japan is chosen as a partner for the future submarine program. This is to ensure that Australia will be able to possess and exercise its own sovereign control over its submarines.

Yours sincerely,

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Sumio Kusaka

Ambassador of Japan to Australia