

[Form 2 (to be reported to Committee on Countermeasures for Contaminated Water Treatment and to be disclosed to public)]

Technology Information	
Area	1,4,5 (Select the number from "Areas of Technologies Requested")
Title	Nuclear Contaminated Waste Water Disposal, Site Tsunami Protection & Groundwater Management
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<p>1. Overview of Technologies (features, specification, functions, owners, etc.)</p> <p><i>This document refers generally to the content of sections 1,4 and 5 but has some influence on sections 2 and 6 also, albeit indirectly.</i></p> <p><i>The technology offered by Maricuda Special Projects Limited (MSPL) in conjunction with Arup and CH2M Hill is both new and innovative and shall be described without reference to those features of which the intellectual property are/may be protected by patent.</i></p> <p><i>Project 'A' - Makes reference to the requirement to control groundwater beneath and adjacent to the Fukushima plant. This project can be readily modeled by proprietary computer programs and thus can be demonstrated to provide both an effective and economic solution. The MSPL solution is supported by Arup who has the necessary expertise required to deliver this technology. The MSPL solution to groundwater management is a recent development based on several years of study at a nuclear site in the UK and was subsequently accepted as a research topic on post graduate doctorate course at a leading UK University. Once adopted based on the results of a short study undertaken by a university or engineering institution, the implementation of the project would be swift and effective. MSPL is proposing a solution based on previous studies which were initiated to protect occupied land from groundwater contamination. Japan may already have the required equipment or this can be shipped from the UK. The level of expertise is able to be transferred to Japanese companies very quickly assuming that the skills are not already present.</i></p> <p><i>The main features of the system are:-</i></p> <ol style="list-style-type: none"> 1. <i>Very economical both to initiate and to maintain.</i> 2. <i>Immediately effective with results able to be obtained very quickly for monitoring</i> 3. <i>Highly effective. A solution based on these principles will deliver a high level of confidence regarding the integrity of the site and its condition.</i> 4. <i>The process provides a long-term non-degradable solution which is logical and secure.</i> 	

Project 'B' - Is a waste water disposal method which enables the disposal operation to be totally controlled and worker safe from the first step to the last. This system addresses all of the common areas of concern relating to the disposal of nuclear waste, including but not limited to; operator safety, environmental controls, effect on food supply, cost effectiveness, risk mitigation, condition monitoring and public confidence/opinion. The intellectual property of this process is valuable and therefore cannot be described in detail, however it is possible to report that providing the basic principles of this system are acceptable then it is a simple matter to demonstrate the process using a real size model in a live monitoring situation. MSPL are able to draw upon the services of Brunel University who would be willing to work with a Japanese university to provide the necessary due diligence.

Project 'C' - Refers to a barrier capable of resisting the 34m tsunami as predicted by the USGS. This barrier can protect the Fukushima Plant and prevent radio-active debris from being spread inland by the inundation of the wave. Radio-active particulate thus distributed would be very difficult and costly to recover so to prevent such an occurrence is of prime importance. Arup would act in the capacity of EPC and would deliver this project using Japanese resources and materials. [This project is also equally applicable to Tokyo and other areas]

Project 'D' - Does not relate specifically to the Fukushima situation but concerns the generation of electrical power by 65MW marine turbine which if placed in the Kuroshio Current would replace nuclear power (32 turbines = 2 x nuclear power stations = 2,200MW)

CH2M Hill would act as EPC and are able to deliver this project using Japanese resources and materials and is prepared to undertake whatever action is considered necessary to provide proof of concept and construction feasibility. This project could make Japan power self-sufficient and eliminate the need to import coal and LPG/LNG from Australia, the US and Canada.

The MSPL hydro-turbines are based on proven hydrodynamic laws and can be easily demonstrated for performance using modern mathematical modeling methods.

Construction requires standard structural/civil engineering methods for which Japan is internationally renown.

2. Notes (Please provide following information if possible.)

- Technology readiness level (including cases of application, not limited to nuclear industry, time line for application)

MSPL, Arup and CH2M Hill collectively require between six to eight weeks from commencement to come to Japan for the purpose of presenting these proposals as projects ready for engagement.

It is envisaged that there would be a period of study which would include all necessary engineering and project management required in order that the project(s) may be presented as deliverable works and that their described function(s) can be adequately demonstrated to be achievable.

The mobilisation period after project initiation would be determined by the state of readiness and present capacity of those companies who would be willing to undertake the described works.

- Challenges

Having visited Japan twice since the 2011 tsunami and having discussed these projects in depth with CH2M Hill and Arup, I am convinced that a dynamic and professional attitude exists which could deliver these projects if required to do so. Japan has the problems and we have the solutions, given the opportunity we can work together over the next few years to improve the quality of life in Japan for future generations.

The challenge is surely to deliver these projects as rapidly as possible in order that the threat of contamination from the Fukushima site can be rapidly contained and the maximum benefit is gained before the predicted 34m tsunami arrives.

- Others (referential information on patent if any)

MSPL is an engineering design and innovation company which is presently directing considerable effort and resource towards providing large scale engineering solutions to some of Japan's large scale problems. The intellectual property of these solutions is currently available

as part of the project package(s) and may be transferred to the relevant Japanese body if required.

3.

【Areas of Technologies Requested】

- (1) Accumulation of contaminated water (Storage Tanks, etc.)**
- (2) Treatment of contaminated water (Tritium, etc.)
- (3) Removal of radioactive materials from the seawater in the harbor
- (4) Management of contaminated water inside the buildings**
- (5) Management measures to block groundwater from flowing into the site**
- (6) Understanding the groundwater flow