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ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)

**NUCLEAR POWER CORPORATION
OF INDIA LIMITED**
(A Govt. of India Enterprise)

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अधिष्ठासी निदेशक (सी पी एवं सी सी)

Nalinish Nagaich

Executive Director (CP & CC)

January 31, 2012

To,
The Editor,
Express News Service / <http://expressbuzz.com>

Sub: Your news story dated January 27, 2012 on expressbuzz.com website

Dear Sir,

This refers to the news story titled "Koodankulam a national shame, says Binayak Sen" published on your website <http://expressbuzz.com/cities/chennai/koodankulam-a-national-shame-says-binayak-sen/357380.html>.

In your news story, Dr. Binayak Sen reportedly says, "It is obviously a huge risk and the fact that they are going ahead with it is shameful," referring to Kudankulam Nuclear Power Plant (KKNPP).

Sir, nothing could be farther from the truth. It is truly unfortunate that such a statement has come from a public figure like Dr. Binayak Sen, especially because KKNPP is indeed one of the safest nuclear plants built in the world till date. A set of multiple overlapping safety features of KKNPP makes this plant a unique engineering feat.

But before I mention some of the salient features of KKNPP, I would first like to point out another discrepancy in Dr. Sen's alarmist assertions about KKNPP in context of the events at Fukushima in Japan.

1.0 The two countries and their geographies are vastly different and not comparable directly. Japan sits on a landmass in a region with high seismic activity, where earthquakes – often intense – are very

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common. This is not at all the case with India. Moreover, Indian nuclear power reactors are built on geographical locations that fall in low seismic activity zones. Indeed, Kudankulam site is located in the lowest seismic activity zone of the country, Zone-II, and it is also far off (about 1500 km) from the tsunamigenic fault (a tsunamigenic fault is where tsunamis originate). As against this, the tsunamigenic fault was only about 130 km away at Fukushima. At KKNPP, the site elevation and location (height) of equipment has ample margins to avoid design basis tsunami flooding.

It may please be noted leak tight doors with gaskets are provided in reactor and other safety related buildings which will prevent any water ingress even in the hypothetical event of a tsunami higher than design basis tsunami.

- 2.0 Earthquake-related (seismotectonic) considerations are pivotal to site selection for a nuclear power plant. The sites offered by the states for setting up nuclear power projects are evaluated by the Site Selection Committee (SSC) of the Government. The SSC evaluates the sites in line with the criteria laid down in the Atomic Energy Regulatory Board (AERB) Code of Practice on Safety in Nuclear Power Plant Siting, which gives the mandatory and desirable requirements of the site for safety considerations.
- 3.0 KKNPP site was selected by the Site Selection Committee of the Government of India after evaluating the several sites in Tamil Nadu offered by the state government. Detailed studies comprising Geo-technical examination, Seismotectonic, Safe grade level, meteorological and several other studies as prescribed in siting code of AERB were carried out by the expert agencies in the field in the country. Based on these studies, the detailed site evaluation report was submitted to Atomic Energy Regulatory Board (AERB), who after a detailed review, accorded site clearance for Kudankulam site.
- 4.0 KKNPP reactors are indeed among the safest in the world. Safety is the top-most priority in nuclear power plants. KKNPP takes this safety paradigm to even greater heights. The Kudankulam project consists of two units of an advanced model of Russian VVER–1000 MW Pressurised Water Reactor, which is a leading type of reactor worldwide.

- 4.1 The design of the plant has been evolved from a series of VVER plants, of which 15 units are under operation for the last 25 years. The state-of-the-art Kudankulam nuclear power plant is designed to provide utmost safety, which is achieved through a set of overlapping safety systems that include both active and passive features.
- 4.2 Passive safety systems are unique in that they do not require human intervention or external motive force for their operation. For example, Passive Heat Removal System (PHRS), which is a unique feature of KKNPP, is designed to provide reactor core cooling even in the worst-case scenario of total loss of electrical power at the plant, including loss of grid power and backup power. This amazing level of safety is achieved because the PHRS uses a passive mechanism for natural air circulation based on the unfailing physical principle of convection.
- 4.3 Hydrogen Recombiners located in the containment building are another example of passive safety at KKNPP. They work on the principle of chemical catalysis and do not require any operator intervention or electricity whatsoever. These set of passive devices recombine hydrogen generated by metal-water reaction at high temperatures during an unlikely extreme event, and thus a hydrogen-gas explosion (which actually happened at Fukushima) would not happen.
- 4.4 Core Catcher, a massive containment device located beneath the reactor core is yet another passive safety device. In the worst-case scenario, even if the highly improbable event of fuel meltdown occurs, the provision of a 'Core Catcher' ensures that there would be no radioactive release in the environment. With passive safety systems like PHRS, Hydrogen Recombiners, Core Catcher, among others, the plant can face even the most stressful conditions and avoid catastrophic events like Fukushima-type accidents.
- 5.0 The safety features of Kudankulam project have been comprehensively reviewed by a task force of NPCIL and committee of AERB in the context of the recent Fukushima accident and it has been found that the safety features of the reactor are adequate to withstand extreme natural events and as well as events like total loss of power and loss of cooling as

witnessed at Fukushima. The report of the task force and AERB is available on the websites of NPCIL and DAE.

Your news story also says that Dr. Sen was appreciative of the way the people had risen as a community and opposed the nuclear plant. You have quoted him as saying, "It is heartening to see the way they have acted for their rights."

Sir, freedom of expression is not only a right but also a solemn responsibility that must be exercised carefully in a democracy, because if your assertions are skewed or one-sided, then you risk misguiding a large number of people who are ready to take your word for granted. For example, why don't public speakers like Dr. Sen ever point out that not a single life has been lost at Fukushima due to radiation exposure? Indeed, the deaths at Fukushima (in excess of 20,000) have all been due to the combined natural calamity of earthquake and tsunami.

Another pertinent fact that is hardly ever discussed at such public forums is about the explosion that took place at Fukushima reactor building, which was not a nuclear explosion at all! It was a hydrogen gas explosion as a result of a chemical reaction and not a nuclear reaction of any sorts. Yet another devious error of omission that is willfully perpetrated by almost all ideologically opposed to nuclear power is that they never tell their audience the fact that in the entire history of nuclear power generation, only 56 people have died in the nuclear accident at Chernobyl (Former USSR) worldwide in nearly 60 years! Such eye-opening facts are not even mentioned and discussion on them is conveniently avoided at most of the public meetings that are held to oppose nuclear power, and thus these forums lose their potential to be constructive. So, while we respect the fundamental right to express personal views, it is also imperative that these views should not be based on fears and emotions leading to panic reaction in the public domain, but should rather be founded on factual information based on scientific facts.

Some vested interests and overzealous activists have been fueling the protests at Kudankulam and misguiding the local population. Laypersons, who are not much aware of the scientific facts, are often pulled into these protests, which is so unfortunate.

I therefore request you to examine science and technology based issues more deeply before publishing views that can prove detrimental to the greater good of the society. Let us make India stronger by sharing

rational scientific views rather than letting unfounded fears lead our opinions. And in this regard, intellectuals like Dr. Sen can indeed play a truly constructive role in nation-building – that is, if they are ready to engage people on the basis of science.

In case you have any specific queries, you can contact me anytime and you may please also visit the NPCIL website, other DAE websites as well as the AERB website. I also request you to please publish this factual information on your website.

Sincerely yours,


N. Nagaich 31-01-2012