

# [IAEA-267-29] AN OVERVIEW OF IMPORTANT FEATURES OF INDIA'S SAFEGUARDS AGREEMENT (INFCIRC/754)

K.L. Ramakumar, Retiree, Department of Atomic Energy, Mumbai 400 001, India

**Disclaimer: Personal views and do not reflect those of the Department**

<p><b>India's safeguards agreements with the IAEA</b></p> <p><u><a href="#">INFCIRC/154 (1963 &amp; 1971) (USA) [Replaced by INFCIRC/433 and 433m1 (1994) with IAEA]</a></u></p> <p><u><a href="#">INFCIRC/211 (1974) (Canada)</a></u></p> <p><u><a href="#">INFCIRC/260 (1978) (USSR)</a></u></p> <p><u><a href="#">INFCIRC/360 (1989) (USSR)</a></u></p> <p><u><a href="#">INFCIRC/374 (1990) (France)</a></u></p> <p><u><a href="#">INFCIRC/754 (2009)</a></u></p> <p><u><a href="#">INFCIRC/754/Add.6 (2014) Additional Protocol</a></u></p>	<p style="text-align: center;"><b>Facilities offered for IAEA Safeguards by India</b></p> <table border="1"> <tr><td>1. Uranium Oxide Plant (Block A), NFC</td><td>16 October 2009</td></tr> <tr><td>2. Ceramic Fuel Fabrication Plant (Pelletizing), NFC</td><td>16 October 2009</td></tr> <tr><td>3. Ceramic Fuel Fabrication Plant (Assembly), NFC</td><td>16 October 2009</td></tr> <tr><td>4. Enriched Uranium Oxide Plant, NFC</td><td>16 October 2009</td></tr> <tr><td>5. Enriched Fuel Fabrication Plant, NFC</td><td>16 October 2009</td></tr> <tr><td>6. Gadolinia Facility, NFC</td><td>16 October 2009</td></tr> <tr><td>7. TAPS 1 – Tarapur Atomic Power Station, Unit 1</td><td>16 October 2009</td></tr> <tr><td>8. TAPS 2 – Tarapur Atomic Power Station, Unit 2</td><td>16 October 2009</td></tr> <tr><td>9. RAPS 1 – Rajasthan Atomic Power Station, Unit 1</td><td>16 October 2009</td></tr> <tr><td>10. RAPS 2 – Rajasthan Atomic Power Station, Unit 2</td><td>16 October 2009</td></tr> <tr><td>11. KK 1 – Kundankulam Nuclear Power Plant, Unit 1</td><td>16 October 2009</td></tr> <tr><td>12. KK 2 – Kundankulam Nuclear Power Plant, Unit 2</td><td>16 October 2009</td></tr> <tr><td>13. RAPS 5 – Rajasthan Atomic Power Station, Unit 5</td><td>19 October 2009</td></tr> <tr><td>14. RAPS 6 – Rajasthan Atomic Power Station, Unit 6</td><td>19 October 2009</td></tr> <tr><td>15. RAPS 3 – Rajasthan Atomic Power Station, Unit 3</td><td>9 March 2010</td></tr> <tr><td>16. RAPS 4 – Rajasthan Atomic Power Station, Unit 4</td><td>9 March 2010</td></tr> <tr><td>17. KAPS 1 - Kakrapar Atomic Power Station</td><td>3 December 2010</td></tr> <tr><td>18. KAPS 2 - Kakrapar Atomic Power Station</td><td>3 December 2010</td></tr> <tr><td>19. Away from Reactor (AFR) Facility, Tarapur</td><td>11 December 2012</td></tr> <tr><td>20. Nuclear Material Store at Tarapur</td><td>11 March 2014</td></tr> <tr><td>21. NAPS 1 - Narora Atomic Power Station, Unit 1</td><td>12 December 2014</td></tr> <tr><td>22. NAPS 2 - Narora Atomic Power Station, Unit 2</td><td>12 December 2014</td></tr> <tr><td>23. Kakrapar Atomic Power Station Unit-3 (KAPS-3)</td><td>11 September 2017</td></tr> <tr><td>24. Kakrapar Atomic Power Station Unit-4 (KAPS-4)</td><td>11 September 2017</td></tr> <tr><td>25. KK-3 – Kundankulam Nuclear Power Plant, Unit 3</td><td>7 May 2018</td></tr> <tr><td>26. KK-3 – Kundankulam Nuclear Power Plant, Unit 4</td><td>7 May 2018</td></tr> </table> <p style="text-align: center;"><b>Suspended as per paragraph 22 of INFCIRC/754</b></p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>More than 76% of nuclear power generation is under IAEA safeguards as compared to 65% in 2014 (Separation Plan)</b></p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Demonstrates India's non-proliferation credentials and its commitment to reduction in carbon footprint</b></p> <p><b>NPPs outside IAEA safeguards did not increase where as those under safeguards increased by 28%</b></p> </div>	1. Uranium Oxide Plant (Block A), NFC	16 October 2009	2. Ceramic Fuel Fabrication Plant (Pelletizing), NFC	16 October 2009	3. Ceramic Fuel Fabrication Plant (Assembly), NFC	16 October 2009	4. Enriched Uranium Oxide Plant, NFC	16 October 2009	5. Enriched Fuel Fabrication Plant, NFC	16 October 2009	6. Gadolinia Facility, NFC	16 October 2009	7. TAPS 1 – Tarapur Atomic Power Station, Unit 1	16 October 2009	8. TAPS 2 – Tarapur Atomic Power Station, Unit 2	16 October 2009	9. RAPS 1 – Rajasthan Atomic Power Station, Unit 1	16 October 2009	10. RAPS 2 – Rajasthan Atomic Power Station, Unit 2	16 October 2009	11. KK 1 – Kundankulam Nuclear Power Plant, Unit 1	16 October 2009	12. KK 2 – Kundankulam Nuclear Power Plant, Unit 2	16 October 2009	13. RAPS 5 – Rajasthan Atomic Power Station, Unit 5	19 October 2009	14. RAPS 6 – Rajasthan Atomic Power Station, Unit 6	19 October 2009	15. RAPS 3 – Rajasthan Atomic Power Station, Unit 3	9 March 2010	16. RAPS 4 – Rajasthan Atomic Power Station, Unit 4	9 March 2010	17. KAPS 1 - Kakrapar Atomic Power Station	3 December 2010	18. KAPS 2 - Kakrapar Atomic Power Station	3 December 2010	19. Away from Reactor (AFR) Facility, Tarapur	11 December 2012	20. Nuclear Material Store at Tarapur	11 March 2014	21. NAPS 1 - Narora Atomic Power Station, Unit 1	12 December 2014	22. NAPS 2 - Narora Atomic Power Station, Unit 2	12 December 2014	23. Kakrapar Atomic Power Station Unit-3 (KAPS-3)	11 September 2017	24. Kakrapar Atomic Power Station Unit-4 (KAPS-4)	11 September 2017	25. KK-3 – Kundankulam Nuclear Power Plant, Unit 3	7 May 2018	26. KK-3 – Kundankulam Nuclear Power Plant, Unit 4	7 May 2018
1. Uranium Oxide Plant (Block A), NFC	16 October 2009																																																				
2. Ceramic Fuel Fabrication Plant (Pelletizing), NFC	16 October 2009																																																				
3. Ceramic Fuel Fabrication Plant (Assembly), NFC	16 October 2009																																																				
4. Enriched Uranium Oxide Plant, NFC	16 October 2009																																																				
5. Enriched Fuel Fabrication Plant, NFC	16 October 2009																																																				
6. Gadolinia Facility, NFC	16 October 2009																																																				
7. TAPS 1 – Tarapur Atomic Power Station, Unit 1	16 October 2009																																																				
8. TAPS 2 – Tarapur Atomic Power Station, Unit 2	16 October 2009																																																				
9. RAPS 1 – Rajasthan Atomic Power Station, Unit 1	16 October 2009																																																				
10. RAPS 2 – Rajasthan Atomic Power Station, Unit 2	16 October 2009																																																				
11. KK 1 – Kundankulam Nuclear Power Plant, Unit 1	16 October 2009																																																				
12. KK 2 – Kundankulam Nuclear Power Plant, Unit 2	16 October 2009																																																				
13. RAPS 5 – Rajasthan Atomic Power Station, Unit 5	19 October 2009																																																				
14. RAPS 6 – Rajasthan Atomic Power Station, Unit 6	19 October 2009																																																				
15. RAPS 3 – Rajasthan Atomic Power Station, Unit 3	9 March 2010																																																				
16. RAPS 4 – Rajasthan Atomic Power Station, Unit 4	9 March 2010																																																				
17. KAPS 1 - Kakrapar Atomic Power Station	3 December 2010																																																				
18. KAPS 2 - Kakrapar Atomic Power Station	3 December 2010																																																				
19. Away from Reactor (AFR) Facility, Tarapur	11 December 2012																																																				
20. Nuclear Material Store at Tarapur	11 March 2014																																																				
21. NAPS 1 - Narora Atomic Power Station, Unit 1	12 December 2014																																																				
22. NAPS 2 - Narora Atomic Power Station, Unit 2	12 December 2014																																																				
23. Kakrapar Atomic Power Station Unit-3 (KAPS-3)	11 September 2017																																																				
24. Kakrapar Atomic Power Station Unit-4 (KAPS-4)	11 September 2017																																																				
25. KK-3 – Kundankulam Nuclear Power Plant, Unit 3	7 May 2018																																																				
26. KK-3 – Kundankulam Nuclear Power Plant, Unit 4	7 May 2018																																																				
<p><b>LEGAL AND REGULATORY FRAMEWORK IN INDIA FOR IMPLEMENTATION OF IAEA SAFEGUARDS</b></p> <ul style="list-style-type: none"> <li>❑ Regulatory consent for operation of nuclear installations             <ul style="list-style-type: none"> <li>➢ AERB</li> </ul> </li> <li>❑ Information to be provided for safeguards purposes as provided in bilateral civil nuclear cooperation and associated agreements</li> <li>❑ Obligations arising out of India's undertakings in safeguards agreements negotiated with the IAEA             <ul style="list-style-type: none"> <li>➢ NCPW and Operators of nuclear installations</li> </ul> </li> <li>❑ Regulations for nuclear export controls             <ul style="list-style-type: none"> <li>➢ NCPW</li> </ul> </li> </ul>	<p><b>Additional safeguards measures In the INFCIRC/754 other than those provided in INFCIRC/66 Rev.2</b></p> <p><b>Result of IAEA's efforts to bring uniformity to subsidiary arrangements and structure and format for reporting requirements.</b></p> <p><b>India's readiness to extend the provisions of INFCIRC/754 to previous safeguarded facilities.</b></p> <p><b>India is the only INFCIRC/66 country with an additional protocol</b></p> <p><b>A critical analysis of some of the important features of the safeguards agreement was carried out to ascertain whether the provisions in the agreement would result in effective implementation of safeguards measures or gave any flexibility to India.</b></p> <p><b>An attempt has been made to remove any misgivings, if any on the efficacy of safeguards implementation as provided by INFCIRC/754 by addressing and interpreting the contents of the relevant paragraphs in the safeguards agreement.</b></p>																																																				
<p style="text-align: center;"><b>Critical analysis of paragraphs 11(f), 25, 30(d), 96 of INFCIRC/754</b></p> <p>Detailed analysis in the form of Frequently Raised Queries (FRQ) and the correct interpretation (CI) of the relevant paragraphs in INFCIRC/754</p> <p><b>Safeguards measures as provided in the above paragraphs are standard provisions in INFCIRC/6/Rev.w. Do not contribute to any dilution of the purpose of safeguards</b></p> <p>Safeguards Document INFCIRC/66 Rev.2 is the basis for all the safeguards agreements of India, Pakistan and Israel.</p> <p>Before INFCIRC/754 safeguards agreement entered into force, India had six previous safeguards agreements. The IAEA had been implementing safeguards in India since 1969 on the basis of the INFCIRC/66/Rev.2 Both safeguarded and unsafeguarded activities and programmes co-existed.</p> <p>Every year the IAEA secretariat concluded that nuclear material, facilities or other items to which safeguards had been applied remained in peaceful activities.</p> <p><b>It is very intriguing to see the very same safeguards provisions in the previous safeguards agreements have now become problematic in INFCIRC/754.</b></p>	<p style="text-align: center;"><b>Challenges</b></p> <p><b>Implementation of safeguards measures as provided in INFCIRC/754 and the additional protocol (INFCIRC/754/Add.6) in terms of maintaining record systems, preparation of accounting reports as per the new format and structure and switching over to electronic transmission of reports to the IAEA was quite challenging.</b></p> <p><b>In addition, modalities of suspension of previous safeguards agreements and bring all the safeguarded items in those nuclear installations under the ambit of INFCIRC/754</b></p> <p><b>Installation of remote monitoring in nuclear material storage facility threw many challenges not only in implementation</b></p> <p><b>Formulating suitable policy and regulatory guidelines for the nuclear installations.</b></p> <p><b>It took almost three years of intense preparation on the part of all the Agencies (operators, NCPW and the IAEA) to complete the task.</b></p>																																																				
<p style="text-align: center;"><b>CONCLUSIONS</b></p> <p>India's undertaking to accept IAEA safeguards in its designated civil nuclear facilities is realised through its legal and regulatory mechanism.</p> <p>The Atomic Energy Act-1962 is the mother Act overseeing all the atomic energy related activities.</p> <p>Creation of NCPW and the enactment of nuclear export regulations strengthened the legal and regulatory structure in the country for effective safeguards implementation.</p> <p>Periodic assessment of safeguards implementation is overseen by DAE-SGAC and DAE-SGIC. The challenges in fulfilling the new safeguards obligations India undertook were successfully addressed with the cooperation of the IAEA.</p> <p><b>IAEA safeguards activities in India span almost 5 decades. The provisions in the INFCIRC/66 Rev.2 based safeguards agreements have stood the test of time and India could demonstrate its impeccable non-proliferation record and successful co-existence of safeguarded and unsafeguarded programmes and activities without overlapping.</b></p> <p><b>The IAEA had continuously drawn annual conclusions that India's safeguarded programmes and activities continue to be peaceful and had not contributed to nuclear weapons and other related military activities.</b></p>	<div style="text-align: center;">  <p><b>Thank you and Namaskar</b></p> <p><b>Email: <a href="mailto:Karanam.ramakumar@gmail.com">Karanam.ramakumar@gmail.com</a></b></p> </div>																																																				