1.	Title of Product/Process/Design/Equipment	**Upgradation of FCC Recycle Oil through Solvent Extraction**
2.	IPR Status Patent/Copyright/Trademark Secured in India/Abroad IPR Details	Patent Filed in India Patent Application No. 0606/DEL/2009
3.	Application/Uses	This technology produces additional quantity of clean feed (low sulfur and aromatics) for FCC unit and premium quality carbon black feed stock (CBFS) simultaneously from low value refinery stream which otherwise is going to be blended into fuel oil pool.
4.	Salient Technical Features including Competing Features	***Improved Quality Feed for FCC Unit :*** The process provides an improved quality feedstock, which is better than the fresh FCC feed (i.e. VGO) itself. The improved quality feedstock (raffinate) results in reduction in coke lay down on cracking catalyst and increase the life of cracking catalyst. ***Quality Feed Stock for Industrial/Advanced Carbon Materials :*** Along with production of improved quality feed for catalytic cracking from clarified oil, this process also co-produces high BMCI aromatic extracts for use as premium quality feedstocks for various industrial/ advanced carbon materials viz. carbon black and mesophase pitch. ***Easy Adaptability:*** This process is easily adoptable by a refinery which also has conventional lube refining facility. The process utilizes the existing 'solvent extraction' and 'FCC unit' within the refinery, needing no major additional investment for setting up of any new units. ***High Profitability :*** Commercial operation shows increased gross refinery margins (GRM) by adopting this process.
5.	Level/Scale of Development	Commercial level
6.	Environmental Considerations	***Environmentally Benign Technology :*** Since, this technology lowers down carbon deposition on catalyst, it helps in reducing

		catalyst consumption, load on FCC catalyst regenerator and CO_2 emissions and will also help in meeting future carbon emission legislations of the refinery.
7.	Status of Commercialization	The technology has been commercialized at M/s Hindustan Petroleum Corporation Limited (HPCL), Mumbai. CSIR-IIP has bagged CSIR Technology award 2009 for the successful commercialization of this technology.
8.	Major Raw Materials to be Utilized	Clarified Oil from FCC unit in petroleum Refinery.
9.	Major Plant Equipment and Machinery Required	Solvent Extraction unit, solvent recovery unit, FCC unit.
10.	Techno-Economics	Adoption of this technology has increased annual profit of the refinery to the tune of Rs 87.6 crore (~ US $18 million).
11.	Technology Package	Available
12.	Photographs