Il Futuro della Non-Proliferazione Nucleare
Casi Critici Regionali e Scenari Globali

A cura di
Maurizio Martellini e Riccardo Redaelli

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Introduzione e presentazione

Il futuro della non-proliferazione nucleare

Maurizio Martellini – Riccardo Redaelli


Sono passati più di cinquanta anni da allora. Il clima delle relazioni internazionali è profondamente mutato, e la Guerra Fredda è terminata con la dissoluzione dell’Unione Sovietica. La fine della medesima ha favorito inizialmente una serie di progressi concreti nell’eliminazione e nel controllo degli armamenti nucleari: riduzione degli arsenali strategici; eliminazione delle armi nucleari tattiche americane ed ex sovietiche; rafforzamento dei meccanismi di verifica; nuovi regimi convenzionali nel settore chimico; revisione delle dottrine militari in senso drasticamente limitativo; garanzie negative di sicurezza da parte delle potenze dotate di arsenali nucleari; rinunce unilaterali volontarie all’esecuzione di esplosioni nucleari e vari regimi cooperativi per ridurre le minacce di proliferazione nucleare.

Purtroppo da diversi anni si assiste ad una tendenza involutiva. Si materializzano sospetti, emergono prove di programmi segreti e di pratiche proliferanti, si arenano le trattative tra la Comunità Internazionale e i cosiddetti “Paesi a rischio”. Di certo si sono registrati importanti progressi - tra i quali è possibile annoverare il disarmo nucleare delle repubbliche post sovietiche e del Sudafrica, la rinuncia alla militarizzazione dei programmi nucleari di Argentina e Brasile, e, da ultimo, la possibile soluzione della questione nucleare nordcoreana, nell’ambito dei Six Party Talks ma permangono anche importanti elementi di detabilizzazione,
come i programmi sull’arricchimento e riprocessamento dell’uranio della Repubblica Islamica dell’Iran che si sono intensificati e rimangono quanto mai ambigui. A Corea del Nord e Iran sono dedicati rispettivamente il capitolo 1 e il capitolo 2 di questo studio.

Del resto, come già ricordato, il TNP era nato nell’ottica del conflitto bipolare, con un mondo caratterizzato da una percezione della minaccia statica, univoca e certa. Per ognuno dei due blocchi, la minaccia era comune ai membri, unica e richiedeva una risposta simile. Con la crisi del sistema bipolare e il collasso sovietico, si è assistito a una profonda trasformazione del concetto stesso di sicurezza e di rischio/minaccia. Ora, si assiste a una pluralità dei rischi/minaccia/sfide e soprattutto, se ne percepisce la loro eterogeneità¹. Non si tratta solo di problemi che appaiono plurali, ma anche di minacce che sono anche profondamente diverse fra loro per natura, grado, intensità e temporalità. Per di più, rispetto alla linearità della provenienza della minaccia tipica del confronto bipolare, ora si assiste ad una multidirezionalità dei possibili rischi, che provengono non più dalla stessa sorgente, ma da una pluralità di attori statuali e non-statali meno conosciuti e più imprevedibili. Multidirezionalità che si è ulteriormente accresciuta nell’ultimo decennio con l’aumento dei NWSs (i paesi dotati di armi nucleari) e con i timori di un attacco terroristico non convenzionale (in particolare dopo l’11 settembre 2001).

La proliferazione delle armi di distruzione di massa rimane così oggi una delle più gravi minacce alla pace ed alla sicurezza internazionali. Con l’espandersi in particolare dei programmi di applicazione del nucleare per usi civili e con la partecipazione di nuovi paesi al cosiddetto “rinascimento nucleare”, il rischio di proliferazione è destinato potenzialmente a crescere. In particolare lo sviluppo dell’energia nucleare ed i possibili centri regionali di arricchimento/riprocessamento del combustibile nucleare in Medio Oriente (a cui è dedicato il capitolo 5) costituiscono motivo di seria preoccupazione data la grande instabilità di questa regione e la presenza di gruppi islamisti militanti radicali. Alcuni analisti parlano addirittura di nuovo “entusiasmo nucleare”, con continui proclami da parte di stati della regione che affermano di volersi avviare sulla strada dell’energia nucleare civile, ma con scarsa chiarezza sugli obiettivi finali, sulle strutture tecnico-specialistiche e di indirizzo e sui “confini” delle loro ricerche.

¹ Proprio il CeMiSS ha dedicato importanti, pionieristici studi sulla trasformazione del concetto di sicurezza e sui cambiamenti alla percezione della minaccia durante tutti gli anni ’90 e inizio 2000.
L’interesse verso la tecnologia nucleare da parte di stati medio-piccoli rilancia anche l’idea di un approccio multilaterale, tanto per evitare la proliferazioni di alcuni soggetti internazionali considerati a rischio, quanto – e soprattutto – per evitare pericolosi effetti domino regionali che questa proliferazione potrebbe causare (come evidenziato dal caso iraniano, che potrebbe spingere diversi paesi arabi a inseguire l’Iran su questa pericolosa strada). Il multilateralismo può essere la sola via – per tanti attori statuali – per raggiungere gli obiettivi proposti in termini di produzione energetica e di garanzie per un nuclear fuel supply che non sia condizionato da pressioni politiche esterne. Questo approccio multilaterale, in effetti, ha dei precedenti proprio agli inizi dell’era nucleare, basti pensare al Piano Baruch, al Programma Atom for Peace, alla nascita dell’IAEA e alla costituzione del Nuclear Suppliers Group. Sul piano più propriamente industriale, si pensi invece al consorzio per la fornitura di uranio debolmente arricchito (LEH) Urenco (Germania, Olanda e Gran Bretagna) o al consorzio Eurodif (guidato dalla Francia).

Ma è essenziale che il multilateralismo divenga – come è stato argutamente scritto\(^2\) “a Dual-Use Technique”: ossia una politica che favorisca lo sviluppo dell’energia nucleare (anche come risposta alle tensioni economiche e produttive sulle materie prime fossili), ma nel contempo divenga uno strumento per evitare la proliferazione nucleare militare. Rispetto agli impianti nazionali, quelli multilaterali presentano un rischio minore di diversione dei materiali e di uso clandestino delle strutture, rafforzano la cooperazione e possono favorire l’adozione di misure anti-spionaggio o di disabilitazione degli impianti, nel caso uno stato volesse rinazionalizzare i propri impianti in gestione multilaterale.

E’ evidente che l’idea multilaterale non ha dunque a che fare solo con il contenimento dei costi e l’ottimizzazione degli impianti, ma può e deve divenire un importante strumento di azione politica per limitare la proliferazione e ridurre la non-confidence e la diffidenza reciproca con stati a rischio, primo fra tutti il caso iraniano. Assorbire in un sistema multilaterale di fornitura del nuclear fuel supply impianti di arricchimento o di riprocessamento che sollevano dubbi e ansie nella comunità internazionale (come nel caso iraniano o nord-coreano) significa ridurre il rischio di una proliferazione regionale o di una crisi militare vera e

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propria (causata da attacchi preventivi contro i complessi nucleari considerati a rischio di proliferazione). Questa funzione di non-proliferazione dell’approccio multilaterale deve accompagnarsi a un rafforzamento del TNP; e l’inizio di questo rafforzamento – in vista di un successo in tal senso alla Conferenza di Revisione del TNP nel 2010 – passa anche attraverso “pratiche virtuose” da parte dei maggiori stati in possesso di armi di distruzione di massa, in particolare i cinque NWS del Consiglio di Sicurezza ONU.

L’ingresso nel XXI secolo è dunque segnato da eventi che mettono in luce in modo inequivocabile il bisogno della Comunità Internazionale di accelerare gli sforzi verso il disarmo nucleare globale e verso il rafforzamento delle salvaguardie e dei controlli contro la possibile proliferazione. Siamo in una stagione critica: a quaranta anni di distanza dall’entrata in vigore del Trattato di Non Proliferazione (TNP) delle armi nucleari, considerato il pilastro del sistema di disarmo e non proliferazione di questo tipo di armi di distruzione di massa, sono necessari ulteriori progressi e sistemi di rafforzamento/integrazione. Al rispetto prioritario degli obblighi di non proliferazione, vanno quindi combinati sforzi sia per ridurre in maniera verificabile gli arsenali strategici esistenti, sia per universalizzare il TNP stesso e rendere più efficaci e stringenti le sue norme.

Infatti, il regime di non proliferazione e disarmo nucleare non è universale, essendovi quattro Paesi al di fuori del trattato stesso che hanno un deterrente nucleare, precisamente l’India, il Pakistan, Israele e la Corea del Nord (che ha denunciato il TNP nel 2003): eccetto Israele, tutti questi Paesi hanno effettuato dei test nucleari dichiarati. Il caso del sub-continente asiatico è particolarmente preoccupante, in quanto Islamabad e Nuova Delhi hanno sviluppato un completo command, control, communications, computing, information and intelligence (C4I2) system e un deterrente nucleare di 50-100 bombe ciascuno. Questi Paesi hanno anche approntato sistemi missilistici balistici a media gittata capaci di raggiungere il territorio avversario in meno di cinque minuti. Le loro “dottrine nucleari” sia pure (come nel caso della Guerra Fredda) basate sulla logica della credibilità, sopravvivenza e ridondanza, sono in questo caso più suscettibili alle situazione geopolitiche regionali, alla stabilità socio-economica dei due Paesi e al grado di espansione nucleare civile in atto o in programma. Riguardo a quest’ultimo aspetto il cosiddetto “accordo nucleare civile” tra India e Stati Uniti – approvato sia dall’Agenzia Internazionale per l’Energia Atomica (AIEA) che dal Nuclear Supply Group (NSG) – potrebbe innescare una pericolosa corsa al rafforzamento degli
arsenali nucleari esistenti nel subcontinente asiatico. A questa problematica sono dedicati i capitoli 3 e 4 della presente ricerca. Questi capitoli illustrano con chiarezza la scivolosità di alcuni concetti continuamente ripetuti – tanto da apparire oramai dei mantra – sugli obiettivi tutto sommato limitati dei programmi nucleari militari indiano e pakistano, e in particolare il concetto di di *Minimal Deterrence*. Si tratta di una formula poco convincente che dovrebbe mantenere la deterrenza e la competizione nucleare fra India e Pakistan ai livelli minimi, ma che in realtà non si basa su meccanismi di limitazione condivisi e chiari, e sembra più che altro coprire le limitate capacità produttive di uranio altamente arricchito o di plutonio dei complessi nucleari di questi paesi.

Nella Comunità Internazionale vi è oggi più che mai la consapevolezza che la minaccia di un uso “improprio” del nucleare esiste, ed affrontarlo è un compito che, come è ovvio, va molto al di là delle possibilità dei singoli Stati; la lotta alla proliferazione nucleare è per definizione uno dei settori che richiedono una forte cooperazione internazionale. Nello scenario attuale, il sistema generalizzato delle Salvaguardie dell’AIEA (in particolare quelle codificate nel cosiddetto *Additional Protocol*) contro la proliferazione delle tecnologie e dei materiali delle armi di distruzione di massa nucleari, costituisce lo strumento più efficace ed adattabile alle sfide che si profilano all’orizzonte. Quindi è soprattutto nell’approccio multilaterale, e nel grado di legittimazione e di democraticità degli accordi e delle organizzazioni internazionali coinvolte, che si possono realizzare le condizioni effettive per accrescere la efficacia e credibilità dell’azione di non proliferazione nucleare.

Tuttavia, è altresì evidente che, in un mondo multilaterale a geopolitiche variabili, la minaccia rappresentata dalle armi nucleari non diminuirà fintanto che non si afferrera un nuovo paradigma per la sicurezza internazionale. Infatti, non c’è dubbio che esista una connessione diretta fra sicurezza regionale e dinamiche della proliferazione nucleare. 

Quello di cui si ha bisogno oggi è un nuovo sistema di sicurezza globale in cui nessun Paese, o gruppo di Paesi, abbia bisogno di contare sulle armi nucleari per la propria sicurezza. Come ben dimostrano i *case-studies* che compongono questa ricerca, il ricorso all’arma nucleare per rafforzare la propria sicurezza presenta rischi e tensioni difficilmente sostenibili dalla comunità internazionale. Occorre quindi approntare e sviluppare un sistema con meccanismi globali efficaci per la risoluzione dei conflitti, e tale per cui alle tensioni regionali di vecchia
data - come quelle del Medio Oriente o della Penisola Coreana - o a quelle generate dalle nuove tensioni geopolitiche del XXI secolo, siano attribuite la priorità e l’attenzione che meritano. Quindi un sistema che sia equo, inclusivo, efficace ed effettivo. Dunque, occorre sviluppare un nuovo paradigma di sicurezza globale che, attraverso il dialogo e la partecipazione congiunta a grandi progetti di disarmo e non proliferazione nucleare, garantisca gli individui e gli Stati dalle minacce globali dalla proliferazioni delle armi di distruzione di massa.

Questo paradigma richiede altresì che, accanto ad ulteriori e progressive riduzioni degli arsenali nucleari esistenti, si dia nuovo slancio alle strategie di disarmo nucleare, attraverso il consolidamento dell’architettura del TNP. A questo proposito l’entrata in vigore del Trattato sul Bando Totale degli Esperimenti Nucleari (Comprehensive Test Ban Treaty, CTBT) e l’avvio di negoziati per un Trattato che proibisca la produzione di materiale fissile a fini militari nucleari (Fissile Material Cut Off Treaty, FMCT) potrebbero rafforzare l’architettura complessiva del disarmo e della non proliferazione nucleare a livello globale.

Per concludere, si può affermare che il regime di non proliferazione e disarmo nucleare del XXI secolo deve fondarsi su un insieme di misure tangibili ed intangibili che vanno dall’attuazione di un nuovo paradigma di sicurezza globale che affronti a livello anche macro regionale le “pulsioni” a dotarsi di armi nucleari, ad un rafforzamento universale del TNP o almeno delle sue provisions, all’entrata in vigore al più presto degli altri pilastri del sistema globale del disarmo e non proliferazione nucleare rappresentati dal CTBT e FMCT, ed infine alla messa in opera di misure multilaterali (come ad esempio in ambito G8) ed internazionali cooperative volte alla riduzione delle minacce dovute alla proliferazione, diversione ed uso illecito di tecnologie, materiali e conoscenze sensibili connesse alla produzione di armi di distruzione di massa.
Capitolo 1.

Il Processo di Denuclearizzazione della Corea del Nord e il Ruolo della Diplomazia Italiana*

Maurizio Martellini

L’attività seminariale, quasi annuale, del think-tank italiano Landau Network – Centro Volta (LNCV) che ha portato all’evento tenutosi a Como il 26 marzo 2007 citato in nota, e che si completerà con una simile iniziativa in programma sempre a Como il prossimo dicembre 2008, ha rappresentato un importante punto di arrivo di due processi: quello internazionale, che con lo strumento del Negoziatore a Sei, noto come Six-Party Talks (a cui partecipano Corea del Nord, Corea del Sud, Cina, Stati Uniti, Russia e Giappone) ha originato l’accordo del 13 febbraio 2007 volto a definire un processo incrementale, a fasi, basato sul principio di “actions-for-actions” per il disarmo nucleare completo della Corea del Nord; e quello nazionale condotto dalla Direzione Generale per l'Asia (DGAO) del Ministero degli Affari Esteri (MAE) con la collaborazione del LNCV, e orientato a tenere aperto un dialogo critico e costruttivo annuale con la Corea del Nord su obiettivi complementari a quelli del Six-Party Talks (attinenti ad un processo incrementale di “engagement” e cooperazione) nei settori tecnologico, economico, sociale e geopolitico.

Infatti l’idea cardine che è stata perseguita fin subito dopo il ristabilimento nel 2000 delle formali relazioni diplomatiche tra l’Italia, il primo dei G7, e la Corea del Nord, è stata quella di creare in Italia una piattaforma di dialogo e confronto critico per i rappresentanti di Pyongyang aperta anche a esponenti di altri Paesi stranieri, primi fra tutti la Corea del Sud e gli Stati Uniti. Questo forum ha come principale scopo, oltre al citato engagement, quello di aiutare la

Corea del Nord a trovare al suo interno i meccanismi e le modalità più idonee per proseguire lungo il cammino – intrapreso negli ultimi anni dal suo leader Kim Jong II – delle riforme economiche, dello sviluppo (industriale ed infrastrutturale) sostenibile e della normalizzazione delle sue relazioni internazionali.

Come si vedrà nella seguente analisi comparata delle due “storie”, quella delle “azioni” della Corea del Nord e dei principali attori internazionali, in primo luogo gli Stati Uniti, e quella delle “parallele-azioni” della DGAO del Ministero degli Esteri italiano sviluppatesi a partire dal 2000, il metodo perseguito è stato quello di approntare un luogo di incontro e dialogo sotto forma di Seminario e di predisporre una shuttle diplomacy informale condotta dal LNCV nel periodo 2001-2008 con l’obiettivo principale di sondare, investigare ed analizzare non solo le principali tendenze, gli sviluppi e i loro impedimenti, ma anche le potenziali crisi maturate sia all’interno della Corea del Nord sia nelle sue relazioni con il mondo esterno. Il fine era allora quello di iniettare queste conoscenze nel Seminario italiano (a Como o a Roma) per cercare sia gli aspetti positivi da sostenere, sia l’eventuale risoluzione e composizione delle difficoltà tramite l’elaborazione di proposte, meccanismi e road-maps future da implementare bilateralmente e multilateralmente.

In altre parole la piattaforma seminariale italiana diventava così uno strumento di attualità con il doppio scopo di aiutare da un lato la comunità internazionale a “conoscere” in chiave non ideologica la Corea del Nord e il suo processo evolutivo moderno, dall’altro Pyongyang stessa a migliorare, finalizzare e al limite correggere le posizioni e decisioni assunte nella Corea del Nord nei campi economico, sociale e politico.

La migliore prova del successo di questa metodologia lanciata nel 2000 dalla diplomazia italiana è nella costante e crescente partecipazione delle autorità di Pyongyang al Seminario italiano, anche durante i momenti estremamente critici generati dall’evoluzione delle crisi missilistica e nucleare, crisi che hanno raggiunto il loro apice con i test missilistici del 4 luglio 2006 e col test nucleare del 9 ottobre di quello stesso anno.

Inoltre il Seminario italiano è stato sempre l’unico e il solo evento in Europa, al di fuori di Pechino, che ha visto la continua partecipazione della Corea del Nord anche in presenza di rappresentanti, ufficiali e non, della Corea del Sud e degli Stati Uniti, oltre ovviamente a quelli dei desks asiatici di importanti Paesi Europei, nonché della Commissione Europea.
Nel seguito divideremo questo processo della diplomazia italiana in 6 grandi periodi, illustrando per ognuno di essi i principali accadimenti relativi alla Corea del Nord, agli Stati Uniti e ad altri attori internazionali, e le conseguenti iniziative prese dalla DGAO del MAE, anche attraverso volontarie missioni del LNCV a Pyongyang:

i) 2000-2001, le riforme economiche e l’apertura al mondo della Corea del Nord;

ii) 2002-2003, la seconda crisi nucleare e l’inizio dell’isolamento internazionale;

iii) 2004, lo stallo internazionale;

iv) 2005, la svolta e il primo Joint Statement del 19 settembre;

v) 2006-2007, i test missilistici e nucleare, la road-map alla denuclearizzazione e il Joint Agreement del 13 febbraio 2007;

vi) Gennaio-agosto 2008, il “disablement” quasi finale del complesso nucleare di Yongbyon e la dichiarazione parziale delle attività nucleari perseguite fino a questa data.

1.1 2000-2001: le riforme economiche e l’apertura al mondo della Corea del Nord

A grandi linee, questo periodo si caratterizza, per quanto concerne gli Stati Uniti, per la transizione dall’amministrazione del presidente Bill Clinton a quella del presidente Gorge W. Bush (quest’ultimo inizierà il suo mandato nel 20 gennaio 2001), mentre riguardo alla Corea del Nord per due grandi eventi: i) la storica visita nel giugno 2000 del presidente Sud-Coreano Kim Dae Jung al leader Nord-Coreano Kim Jong Il; e ii) la visita del Segretario di Stato Madeleine Albright nell’ottobre 2000.

In quello stesso periodo, successivamente alla visita in Cina nel maggio 2000 del leader Kim Jong Il, la prima dopo 20 anni, Pyongyang iniziava un timido ma crescente processo di riforme economiche, e nell’agosto di quello stesso anno la Hyundai ebbe il via libera dalle autorità di Pyongyang ad aprire a Kaesong una zona di investimento per diverse centinaia di imprese Sud Coreane.

Ma ancora più importante per lo sviluppo sociale ed economico della Corea del Nord fu il consenso, mediante una decisione presa ai più alti livelli della dirigenza di Pyongyang con
l’avallo in prima persona del leader Kim Jong Il, all’inserimento di elementi di libero mercato e profitto all’interno del sistema economico centralizzato e socialista Nord Coreano, decisione che vedrà poi il suo lancio formale nel luglio 2002 con l’introduzione di nuovi prezzi e salari in linea con quelli effettivamente praticati a livello di mercato nero.

Nello stesso periodo l’amministrazione americana del presidente Bush, dopo la conclusione del suo policy review sulla Corea del Nord, lanciava un Bold Approach che avrebbe potuto portare, se non ci fossero stati due “incidenti” incorsi nel 2002, alla graduale normalizzazione economica e diplomatica della Corea del Nord, anche nei confronti degli Stati Uniti.

L’Italia. In questo stesso periodo l’Italia non poté, né volle, mostrarsi indifferente di fronte alle succitate aperture Nord Coreane, ed in fondo anche americane, anche perché queste si dimostravano in linea con la possibilità di una transizione pacifica della società Nord Coreana ad una economia più aperta e meno centralizzata, così come di una normalizzazione diplomatica con i Paesi del G7.

Così nel gennaio del 2000 l’Italia fu il primo dei G7 a intessere relazioni diplomatiche con Pyongyang, e a spingere nella medesima direzione anche i Paesi dell’Unione Europea di allora.

Inoltre, grazie alle principali raccomandazioni emerse da un seminario internazionale su “Promoting International Scientific, Technological and Economic Cooperation in the Korean Peninsula”, organizzato dalla DGAO del MAE in collaborazione con il LNCV e tenutosi a Roma il 1-2 giugno 2000, era subito emerso che il principale problema che avrebbe limitato e bloccato lo sviluppo industriale ed economico del Paese, anche se avesse intrapreso la direzione di un libero mercato “alla cinese”, sarebbe stata (ed è rimasta) l’assenza cronica di capacità produttiva (ma anche di trasmissione) di energia elettrica. Con il supporto della DGAO, il LNCV allora effettuò una missione fact-finding nell’ottobre 2001. La principale conclusione di quella visita fu che qualunque processo diplomatico volto a creare delle confidence building measures (CBMs) doveva in primis avviare azioni su base bilaterale e multilaterale dirette alla “riabilitazione e ammodernamento dei sistemi di produzione, trasmissione e uso dell’energia elettrica per la DPRK (il nome ufficiale per la Corea del Nord)”. Anzi, il principale messaggio politico emerso da quella missione, e riportato dal LNCV al MAE, fu che “tale riabilitazione e ammodernamento dei sistemi energetici è di per sé una
delle principali CBMs” a cui la Corea del Nord avrebbe risposto positivamente e costruttivamente accelerando il suo processo di riforme strutturali economiche e sociali.

1.2 2002-2003: la seconda crisi nucleare e l’inizio dell’isolamento internazionale

Dal punto di vista americano fu il 2002 a conoscere il definitivo epilogo del cosiddetto Agreed Framework (AF), un accordo bilaterale tra gli Stati Uniti e la Corea del Nord risalente all’ottobre 1994 e negoziato dal presidente americano Bill Clinton; tale accordo aveva come obbiettivo di far cessare l’attività, all’origine della prima crisi nucleare, di produzione del materiale fissile bombabile sotto forma di plutonio nel Centro nucleare Nord Coreano di Yongbyon – comprensivo sia di un reattore nucleare di 5 MW, sia di un impianto di riprocessamento del suo combustibile esausto per l’estrazione del plutonio – in cambio della costruzione di due reattori nucleari “ad acqua leggera”, ciascuno di 1 GW, ad opera di un consorzio internazionale noto come Korean Energy Development Organization (KEDO), a cui partecipava pure l’Unione Europea, e della fornitura annuale di 500.000 tonnellate di greggio. Questo turn-over dalla politica americana perseguita fino alla fine del 2001 fu determinata da due eventi cruciali: i) l’annoveramento il 30 gennaio 2002, all’interno dello state of the union address del presidente Bush, della Corea del Nord tra i membri dell’axis of evil, assieme alla Repubblica Islamica dell’Iran e dell’Iraq; e ii) l’accusa mossa nell’ottobre 2002 a Pyongyang dallo special envoy americano per la Corea del Nord, l’ambasciatore James Kelly, di perseguire un programma clandestino indirizzato alla produzione del solo altro materiale fissile bombabile, vale a dire l’highly enriched uranium (HEU).

A tali due avvenimenti, e alla conseguente sospensione, a partire dal dicembre di quell’anno, della fornitura delle 500.000 tonnellate di greggio previste dall’AF, la Corea del Nord, che ha sempre smentito di avere un tale programma HEU, rispose con una serie di rappresaglie quali l’espulsione da Yongbyon degli ispettori dell’Agenzia Internazionale per l’Energia Atomica (AIEA) all’inizio del 2003, il riavvio del reattore nucleare di Yongbyon, e la conseguente fuoriuscita nell’aprile di quello stesso anno dal Trattato di Non-Proliferazione (TNP) nucleare, di cui fino ad allora era stato uno paese membro come non-nuclear weapon state (NNWS).
L'Italia. Alla fine del 2002, alla vigilia di una importante riunione del Board della KEDO nel Dicembre di quell’anno, e nei primi mesi del 2003, la DGAO del MAE promosse a livello del COASI e della Commissione Europea un tentativo di presentare la fornitura di 500.000 tonnellate di greggio come una misura umanitaria. L’intento di questa misura era quello di lasciare aperto un canale di dialogo, e al tempo stesso di proporre l’Europa come centro geopolitico per una possibile futura strategia di “do ut des” che consentisse di giungere alla rinuncia volontaria e definitiva al nucleare da parte della Corea del Nord, in cambio di una futura assistenza nel campo economico e tecnologico (soprattutto nel settore energetico) e nella formazione professionale.

Purtroppo questa proposta fu rigettata dai partners Europei, creando così le condizioni, come di fatto è avvenuto, per un quasi completo isolamento internazionale di Pyongyang.

Questa miope scelta strategica era motivata dalla convinzione diffusa che la Corea del Nord avrebbe così desistito dal proposito di proseguire nel suo programma nucleare; purtroppo è avvenuto esattamente il contrario, come il test nucleare dell’ottobre 2007 ha mostrato alla comunità internazionale.

Nei primi mesi del 2003, parallelamente a questi sviluppi ufficiali, il LNCV con il sostegno della DGAO del MAE condusse due importanti visite di track-2: i) una a Washington; e ii) l’altra, nel febbraio, a Pyongyang.

Le ragioni principali di quelle missioni erano essenzialmente due: a) esplorare la fattibilità di un processo negoziale multilaterale, come di un escamotage per permettere un domani dei contatti diretti tra gli Stati Uniti e la Corea del Nord a latere di questo negoziato (poi di fatto avvenuti negli ultimi anni nell’ambito del Six-Party Talks); b) la convinzione che l’affermazione nel Pacifico della Corea del Nord come nuova potenza nucleare militare (in aggiunta ai già presenti Cina, Russia e Stati Uniti, che hanno ovviamente interessi strategici nella regione) fosse e sia una minaccia alla sicurezza globale e alla stabilità strategica in questa area geografica del mondo. E’ interessante ricordare che in un importante colloquio avuto dal LNCV al Congresso di Washington, gli interlocutori americani accettarono di fatto la logica di un formato multilaterale per negoziare il disarmo nucleare Nord Coreano, mentre nella successiva visita di febbraio a Pyongyang, le controparti Nord Coreane rifiutarono nettamente questa idea, adducendo a motivazione che la crisi nucleare fosse di fatto una crisi dettata
dalla politica ostile di Washington nei confronti di Pyongyang, e dal tentativo di cambiare il sistema politico di questo Paese.

In ogni caso, come è ben noto, la Cina e la Corea del Sud riuscirono a convincere Washington ad avviare un negoziato multilaterale, il primo, tenutosi a Pechino il 23-25 aprile 2003, allargato a soli 3 membri (la Corea del Nord, la Cina e gli Stati Uniti), mentre i successivi “estesi” a tutte le altre potenze regionali, precisamente il Giappone, la Corea del Sud e la Russia; in questa forma allargata tale negoziato multilaterale è oggi conosciuto come Six-Party Talks (6pts).

Il primo round del 6pts si ebbe nel 27-29 agosto 2003.

Sia pure conclusosi senza nessun Joint Statement da parte dei sei membri, il primo round dei 6pts promosse la proposta di risolvere la questione nucleare con synchronous or parallel implementations, senza però decidere tra queste due opzioni. Inoltre questo primo round evidenziò come la sfiducia e il disaccordo tra gli Stati Uniti e la Corea del Nord fosse così alta da richiedere, per un qualunque sviluppo positivo futuro, il coinvolgimento di un “honest broker” esterno alla regione, ad esempio la UE, e una sostanziale assistenza alla Corea del Nord a proseguire sulla strada delle riforme economiche in corso, con la speranza che queste potessero accelerare lo sviluppo del Paese e rendere quindi meno necessario il ricorso ad un deterrente nucleare per garantirne la sicurezza e la sovranità nazionale. Con questo spirito, la DGAO del MAE ritenne fosse importante realizzare in quell'anno un Seminario che si articolasse su questa base, e assieme al LNCV organizzò un evento intitolato “Economic Development of the DPR of Korea and the Future of Cooperation with Europe”, che si svolse a Roma il 20-21 ottobre 2003.

Infine nel dicembre del 2003, anche grazie al suddetto impegno italiano per la prosecuzione del dialogo con la Corea del Nord, la missione dell'Unione Europea a Pyongyang, significativamente sotto la Presidenza di turno italiana, venne autorizzata ad attraversare via terra il 38° parallelo e la zona demilitarizzata (DMZ) – un fatto storico, in quanto sino ad allora l'attraversamento della DMZ non era stato autorizzato ad altri europei, se non, nei mesi precedenti, al Ministro degli Esteri svizzero, un gesto politicamente e simbolicamente di estrema rilevanza che trovò ampi consenso mediatico, sul piano nazionale e internazionale.
1.3 2004: lo stallo internazionale

Durante questo periodo, caratterizzato dal secondo round dei 6pts a Pechino del 25-28 febbraio e dal terzo round del 23-26 giugno 2004, entrambi conclusisi senza nessun Joint Statement, gli Stati Uniti presentarono la prima concreta proposta per una soluzione pacifica del problema nucleare, basata sulla pretesa di un complete, verifiable, irreversibile dismantlement (CVID) da eseguirsi quale premessa non solo per ogni successiva possibile azione, di “premio” e di “contropartita”, nel campo dell’assistenza energetica e finanziaria, ma anche per una futura normalizzazione dei rapporti tra Pyongyang e Washington.\(^3\)


\(^3\) La reazione di Pyongyang, come era aspettabile, fu di completo rigetto di questa proposta in quanto la distruzione irreversibile “a priori” del suo programma nucleare avrebbe tolto a Pyongyang ogni possibilità di “dissuasione negoziale” e leverage.
Allora, il 24 settembre del medesimo anno, la DGAO del MAE organizzò con il LNCV a Como il terzo Seminario della serie – il quarto se si tiene conto di quello tenutosi nel giugno 2000, che però non aveva visto la partecipazione dei Nord Coreani – intitolato “A Comprehensive Dialogue between the EU and DPRK”. Questo Seminario aveva l’intento di presentare alla comunità internazionale non Nord Coreana la proposta del non-paper del LNCV sopraccitata che era stata presentata a Pyongyang nel giugno 2004.

Inoltre, l’altro intento del Seminario era quello di individuare per la DGAO delle aree di azione politica complementari al processo dei negoziati nucleari condotti nell’ambito dei 6pts (in cui l’Europa è assente), aree che risultassero altresì essenziali per stabilizzare il processo di denuclearizzazione della Penisola Coreana e permettessero di avviare rapidamente ed esaustivamente la riabilitazione e modernizzazione dei sistemi energetici della Corea del Nord. Dalle chairman conclusions di quel Seminario si possono evincere in particolare due tasks che furono poi successivamente proposte in COREU appropriati dalla DGAO del MAE all’Unione Europea:

a) La necessità di avviare un processo parallelo, ad esempio in un gruppo di lavoro, volto al conseguimento di un regime di pace permanente nella Penisola Coreana, anche in parallelo al 6pts, in quanto, come indicato nelle chairman conclusions, “normalization would not…be meaningful without a formal end to the Korean War”;

b) Il suggerimento di salvare la KEDO come Organizzazione indirizzata alla riabilitazione, modernizzazione e ampliamento a livello di capacità produttiva dei sistemi energetici della Corea del Nord, senza più il mandato di costruire due reattori nucleari come richiesto dal defunto Agreed Framework (AF).

Come riportato nelle chairman conclusions del Seminario del 2004, i partecipanti sostennero che il principale beneficio della KEDO come Organizzazione risiede nell’insieme delle relazioni pratiche e nell’alta confidenza create tra gli operatori KEDO e i Nord Coreani, cioè “the KEDO practices have made it possible to establish an array of basic working relationships and common experiences, as well as a mutual understanding, between the KEDO and DPRK experts”.

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Purtroppo questa idea di continuare a far vivere la KEDO come Organizzazione senza il mandato dell’AF non trovò il sostegno del suo Board, e quindi la KEDO cessò di esistere, sia come strumento dell’AF sia come potenziale futura Organizzazione multilaterale per lo sviluppo energetico integrato di tutta la Penisola Coreana, nel maggio 2005.

1.4 2005: la svolta e il primo Joint Statement del 19 settembre

L’ultimo round dei 6pts, il terzo, si era concluso nel giugno 2004 senza nessuna dichiarazione congiunta e senza nessuna decisione su quando riprendere il negoziato a sei. All’inizio di quest’anno vi fu anzi un’escalation nelle accuse reciproche tra Pyongyang e Washington, con la prima che indicava nella politica ostile e nell’intransigenza americana la causa principale del fallimento degli ultimi round dei 6pts, mentre Washington rintracciava tale causa nel tentativo Nord Coreano di prendere tempo allo scopo di incrementare il suo deterrente nucleare.

L’Italia. Come vista da Roma, questa situazione di stallo era determinata dalla completa reciproca sfiducia tra Washington e Pyongyang e dal fatto che il processo dei 6pts, per come era stato condotto fino a quel momento, non aveva toccato tutti gli altri aspetti politici necessari a creare un clima positivo per il negoziato nucleare stesso, tra cui le garanzie di sicurezza ed il riconoscimento dai più alti vertici dell’amministrazione americana, sostanzialmente dal Segretario di Stato Condoleezza Rice, della legittimità del sistema politico scelto dal popolo Nord Coreano. Inoltre, ad accrescere la tensione internazionale sulla questione nucleare Nord Coreana vi era stato un comunicato del loro Ministero degli Esteri, emesso a febbraio del 2005, che ammetteva, per la prima volta, la produzione da parte di Pyongyang di testate核。Sino a quel momento si era infatti semplicemente parlato più genericamente di un deterrente nucleare.

In questo periodo, prima dell’estate, due importanti iniziative parallele vennero contemplate a Roma con l’intento di “sbloccare” il negoziato nucleare sospeso dal giugno del 2004, e di permetterne quindi nuovamente un quarto round dei 6pts: una missione di fact-finding del LNCV a Pyongyang, e l’organizzazione di un’importante visita del Sottosegretario Margherita Boniver, prima a Washington, poi a Pyongyang e a Seoul nell’estate 2005. L’intento era
quello di approntare una sorta di shuttle diplomacy e far pervenire a Washington le ragioni sottese al rifiuto di Pyongyang di riavviare il negoziato a sei, ragioni che ad avviso del LNCV erano connesse principalmente al mancato riconoscimento ufficiale, da parte americana, della sovranità del sistema politico a Pyongyang.

Questa ipotesi venne di fatto confermata negli incontri avuti al Ministero degli Esteri durante la visita del LNCV a Pyongyang nei primi giorni di giugno 2005. Anzi, gli interlocutori chiesero esplicitamente che l’Italia si adoperasse, ad esempio attraverso la visita di Washington del Sottosegretario Boniver in programma nei primi giorni di luglio, affinché (citando le testuali parole): “the US must recognize and respect our system”.

E’ interessante porre l’accento sul linguaggio adottato, perché non si trattò di una richiesta esplicita di legittimazione dell’attuale leadership a Pyongyang, ma più semplicemente, e con una formulazione meno vincolante per Washington, della richiesta di una manifestazione di riconoscimento e di rispetto per il sistema politico Nord Coreano. Inoltre, nel colloquio a Pyongyang, le autorità Nord Coreane indicarono esplicitamente che, una volta ricevuto da Washington questo attestato, esse sarebbero ritornate al negoziato a sei.

La successiva visita del Sottosegretario Boniver nel luglio 2005 poté puntualizzare anche questo problema Nord Coreano, e la missione poté registrare risultanze estremamente positive, coincidendo con l’annuncio di Pyongyang della volontà di tornare al processo 6pts a Pechino, allora sospeso da più di un anno.

Grazie ad una ulteriore missione del LNCV, tra la fine di agosto e i primi di settembre, a Pyongyang, ma anche a Pechino, a Seoul e a Washington, con l’obiettivo di esplorare l’opportunità di conferire all’annuale Seminario di Como un ruolo più “politico”, la DGAO riuscì poi a mettere a punto un’agenda per tale evento su “Cooperative Stability in North East Asia: Towards a Political Process”, svoltosi poi a Como il 28 ottobre 2005. Raccogliendo l’incoraggiamento e il sostegno non solo di Pyongyang e Seoul – ma anche, significativamente, di Washington e Pechino – la DGAO del MAE ha voluto conferire a quel Seminario un ruolo non solamente tecnico, estendendone la partecipazione alle più importanti autorità di Pyongyang e Seoul, alla presenza altresì di rappresentanti dei Paesi coinvolti nell’esercizio negoziale a sei. Inserita pertanto in un climax di progressivo ampliamento dell’analisi geopolitica della Penisola Coreana, l’iniziativa di ottobre è stata però la prima, non limitata ad esperti e addetti ai lavori, ad affrontare in un’ottica unitaria e ad ampio spettro
anche gli altri importanti dossier che fanno da cornice al problema nucleare e che, come si è già sottolineato, dovrebbero fornire il punto di arrivo obbligato per ogni possibile meccanismo di denuclearizzazione della Corea del Nord che sia irrevocabile e realistico, precisamente:

1) la trasformazione dell’esercizio 6pts in una futura architettura di sicurezza regionale;

2) il conseguimento di un regime di Pace permanente nella Penisola Coreana che metta fine all’Accordo di Armistizio tuttora vigente dopo la fine della Guerra di Corea del 1953.

Il Seminario di Como si è svolto anche in un momento estremamente positivo per il negoziato nucleare stesso, in quanto il 13-19 settembre si era riavviato il quarto round del negoziato a sei che aveva conseguito un importante risultato, il primo dall’inizio di questo esercizio, con il Joint Statement del 19 settembre con cui la Corea del Nord si impegnava “to abandoning all nuclear weapons and existing nuclear programs” in cambio, da parte degli altri cinque membri del 6pts, “to promote economic cooperation in the field of energy, trade and investment, bilaterally and/or multilaterally”. Il Seminario di Como, che ha visto in un paese Europeo e al di fuori di Pechino la partecipazione – fatto anch’esso senza precedenti – dei Vice Ministri degli Esteri della Corea del Nord e della Corea del Sud, assieme all’Ambasciatore De Trani, allora special envoy dell’amministrazione americana per la Corea del Nord, ha voluto inoltre individuare, anche alla luce della dichiarazione congiunta del 19 settembre, i possibili margini di una futura azione europea ed italiana.

Purtroppo le sanzioni finanziarie imposte di lì a poco dal Dipartimento del Tesoro degli Stati Uniti al Banco Delta Asia (BDA) di Macau, a causa di attività di riciclaggio monetario e di falsificazioni della valuta americana, finì col bloccare un conto della Corea del Nord di 25 milioni di Dollari americani.

Come conseguenza di ciò, Pyongyang decise di interrompere la prima sessione del quinto round dei 6pts, che si ebbe il 9-11 novembre 2005, e dichiarò che avrebbe ripreso i negoziati nucleari a sei solo una volta che Pyongyang fosse tornata in possesso di un tale bene.
1.5 2006-2007: i test missilistici e nucleare, la road map alla denuclearizzazione e il Joint Agreement del 13 febbraio 2007

1.5.1 Anno 2006

Nel 2006 l’esercizio negoziale a sei è rimasto bloccato per quasi tutto l’anno (riprenderà con la seconda sessione del quinto round solo il 18-22 dicembre 2006) dalla questione della BDA e da un continuo scambio di responsabilità tra Washington e Pyongyang. Ma questo anno sarà ricordato soprattutto per due eventi di estrema preoccupazione per la non-proliferazione globale e l’equilibrio strategico del Pacifico: i test missilistici del 4 luglio 2006 che hanno interrotto la moratoria in vigore dal 1999 e il primo test nucleare del 9 ottobre. Si ritiene oggi che le principali ragioni che hanno portato la Corea del Nord a sfidare la comunità internazionale con tali azioni sono essenzialmente due: i) una interna, volta a bilanciare le continue ed incrementali concessioni economiche e sociali che Kim Jong Il concedeva al popolo Nord Coreano con una mossa “di forza” atta a gratificare i suoi quadri militari più reazionari ed anti-americanì; ii) una esterna indirizzata soprattutto a Washington, ma anche a Pechino, che un incontro bilaterale tra i negoziatori dei 6pts Americano e Nord Coreano non era più rinviabile dopo il test nucleare che, anche se non perfettamente riuscito (solo una frazione di chiloton rispetto ai 4 annunciati prima del test a Pechino), indicava la capacità di Pyongyang nello sviluppare e produrre un “crude nuclear explosive device” al plutonio prodotto dal suo complesso nucleare di Yongbyon.

Il successivo test nucleare del 9 ottobre 2006 e la conseguente Risoluzione del Consiglio di Sicurezza dell’ONU n. 1718 del 14 ottobre resero impossibile alla fine realizzare un Seminario che non fosse semplicemente un esercizio accademico. Ciononostante, la posizione presa della DGAO fu quella di tenere aperta la possibilità di convocare questo evento una volta che il negoziato a sei fosse ripartito, una eventualità che molti analisti ritenevano fosse possibile se gli Stati Uniti e la Corea del Nord avessero avuto finalmente un incontro bilaterale diretto al di fuori della cornice multilaterale dei 6pts. Il ragionamento fatto era che questo incontro avrebbe dovuto delineare necessariamente i bench-marks, che Washington e Pyongyang considerano “irrinunciabili”, di ogni futuro action plan concreto e realistico per la denuclearizzazione della Corea del Nord. Il formato multilaterale del negoziato nucleare a sei avrebbe avuto allora una funzione di “garante” di quell’action plan deciso in sostanza tra Washington e Pyongyang, evitando in questo modo i problemi di un formato esclusivamente bilaterale come era stato l’Agreed Framework del presidente Clinton. Una missione del LNCV a Washington nel novembre 2006 aveva altresì evidenziato come pure negli Stati Uniti vi fosse ormai la convinzione che per sbloccare il negoziato occorresse un incontro bilaterale, al più “facilitato” dalla Cina. Ma evidentemente occorreva che il capo negoziatore americano, l’Ambasciatore Chris Hill, ricevesse l’autorizzazione a questo passo dal Segretario di Stato Rice in persona, e ciò era una delle incognite in questa relazione trilaterale Corea del Nord-USA-Cina, con la Cina sempre nel suo tradizionale ruolo da storico “garante” degli interessi strategici di Pyongyang.

- **1.5.2 Anno 2007**

Inaspettatamente il primo storico incontro bilaterale(dopo la crisi nucleare dell’HEU dell’ottobre 2002) fuori da Pechino tra i due capo negoziatori della Corea del Nord e degli Stati Uniti, rispettivamente il Vice Ministro degli Esteri Kim Gye-gwan e l’Ambasciatore Chris Hill, si tenne a Berlino nel gennaio 2007. In questo incontro i due negoziatori si accordarono probabilmente nel rilascio dei 25 milioni di Dollari americani, liberati dal Banco Delta Asia di Macau per autorizzazione del Tesoro Americano, in cambio dello shut down del reattore nucleare di Yongbyon. Il resto, a partire da quel turning point di Berlino è cadenzato dai
seguenti eventi che finalmente hanno avviato il processo di denuclearizzazione della Corea del Nord:

- **13 febbraio 2007**: *Joint Statement* che conclude il quinto *round* dei 6pts svoltosi a Pechino, e che delinea le cosiddette “*First-Phase Actions*” che dovrebbero concludersi con lo *shut down* del reattore plutogeno di Yongbyon in cambio dello *shipment* iniziale di 50.000 tonnellate di greggio a Pyongyang come prima mossa di un pacchetto di aiuti energetici da parte degli Stati membri ai 6pts quantificato nell’equivalente energetico pari ad 1 milione di tonnellate di petrolio;

- **Febbraio – giugno 2007**: risoluzione dell’”affare” BDA ed inizio a giugno delle fasi di *shut down* del reattore di Yongbyon;

- **14 luglio 2007**: la Corea del Nord blocca per la seconda volta (dopo l’implementazione dell’Agreed Framework, AF, dell’Amministrazione Americana di Clinton del 1994) il reattore di Yongbyon, ma ora con la sostanziale differenza che tutto il complesso nucleare di Yongbyon - comprendente oltre al reattore nucleare, l’impianto di riprocessamento del combustibile spento di tale reattore e l’impianto di produzione delle sue sbarre di combustibile – sarà smantellato gradualmente;

- **15 luglio 2007**: la Corea del Nord cessa la produzione di plutonio nel complesso nucleare di Yongbyon. Nei quasi 20 anni di attività (non continuativa) del reattore di 5MW di Yongbyon gli esperti occidentali hanno stimato che la Corea del Nord ha prodotto 30-50 kg di plutonio, pari a circa 6-8 bombe atomiche. I nord coreani nel novembre di quest’anno (2007) hanno invece comunicato a Washington che hanno prodotto solo 30 kg di plutonio. La discrepanza con le stime è evidentemente un motivo di seria preoccupazione che non può essere chiarita in assenza di un intrusivo e completo sistema di verifiche.

- **settembre 2007**: secondo incontro bilaterale Hill – Kim a Ginevra, per preparare le fasi successive del *disablement* di tutte le strutture nucleari, e quindi non solo del complesso di Yongbyon, Nord Coreane;

- **3 ottobre 2007**: conclusione del sesto *round* dei 6pts in cui le Parti si accordano per le cosiddette “*Second-Phase Actions*” del processo di denuclearizzazione della Corea del Nord. In questa seconda fase si dovrà procedere al *disablement* dei tre impianti del complesso nucleare di Yongbyon, che dovrà altresì essere completato entro il 31 dicembre di quest’anno. Inoltre entro questa data, Pyongyang dovrà fornire una dichiarazione “*complete and correct*” di tutte le attività nucleari svolte, oltre quella
plutogene, come ad esempio le supposte attività di arricchimento dell’uranio. In cambio la Corea del Nord riceverà aiuti economici, energia ed assistenza pari all’equivalente di 1 milione di tonnellate di greggio, ed inoltre gli Stati Uniti toglieranno il Paese dalla loro lista di Stati sponsor di terrorismo;

- **31 dicembre 2007:** nonostante l’accordo del 3 ottobre Pyongyang non ha completato entro la deadline prevista le attività, già iniziate, di mettere fuori uso l’intero complesso nucleare di Yongbyon e inoltre non ha fornito la dichiarazione esaustiva di tutte le sue attività nucleari. In particolare, tale dichiarazione dovrebbe includere informazioni cruciali quali il numero di ordigni nucleari che la Corea del Nord ha prodotto e il luogo del loro immagazzinamento (tuttavia questo aspetto non era citato nell’accordo del 3 ottobre che definisce solo la seconda fase del processo di denuclearizzazione, ma costituisce certamente uno dei punti essenziali delle cosiddette “Third-Phase Actions”).

1.6 Gennaio-agosto 2008: il “disablement” quasi finale del complesso nucleare di Yongbyon e la dichiarazione “parziale” delle attività nucleari perseguite fino a questa data.

L’attività di disablement del complesso nucleare di Yongbyon fino al 14 agosto 2008, data in cui Pyongyang ha dichiarato di averla sospesa, era completata all’80% circa (mentre gli aiuti economici ed energetici in greggio erano stati elargiti solo al 40% circa rispetto a quelli concordati). Si noti che volendo Pyongyang potrebbe riattivare tale complesso nucleare in un anno circa e il suo reattore di 5MW (che non è ancora stato smantellato irreversibilmente) potrebbe produrre nuovamente quasi 6 kg di plutonio all’anno.

Una timeline dei principali avvenimenti di questo periodo è la seguente:

- **8 maggio 2008**: la Corea del Nord consegna a Washington 18.000 pagine di dati sulle attività di funzionamento del reattore di Yongbyon fin dall’avvio della sua “criticità”;
- **26 giugno 2008**: Pyongyang consegna a Pechino con 6 mesi di ritardo la “complete and correct declaration” di tutti i suoi programmi nucleari. Sebbene tale dichiarazione non sia stata resa pubblica, gli esperti ritengono che essa non contenga tre “critical issues”: i) il numero di bombe atomiche effettivamente prodotte (a parte quella usata per il test nucleare dell’ottobre 2006); ii) l’esistenza o meno di attività clandestine di arricchimento dell’uranio; iii) conferma o smentita della cooperazione con la Siria per costruire sul suo suolo un reattore nucleare tipo quello di Yongbyon. In cambio di questa dichiarazione, Washington avrebbe rimosso (dopo 45 giorni) la Corea del Nord dalla lista degli Stati sponsor di terrorismo, permettendo così a Pyongyang di accedere ai meccanismi di credito internazionale;
- **27 giugno 2008**: distruzione della torre di raffreddamento connessa al reattore di Yongbyon;
- **10 luglio 2008**: nuovo round dei 6pts, il primo dopo nove mesi dall’ultimo incontro, volto principalmente a definire un intrusivo e completo sistema di verifiche ed ispezioni dell’intero programma nucleare nord coreano. Questo sistema dovrebbe includere: i) visite ai siti dichiarati sospetti; ii) interviste al personale scientifico e tecnico coinvolto in tale programma; iii) prelievo di samples da tali siti;
14 agosto 2008: Pyongyang comunica agli Stati membri dei 6pts che ha interrotto le fasi finali di *disabling* del suo complesso nucleare, minacciando altresì la possibilità di ripristinarlo nuovamente. La ragione addotta è che Washington non ha ancora, a questa data, rimosso il Paese dalla lista di Stati sponsor di terrorismo. È opinione condivisa da molti analisti che la Corea del Nord difficilmente accetterà un sistema di monitoraggio e di verifiche intrusive come quelle richieste da Washington, e non rinuncerà al suo armamento nucleare fintanto che non ci sarà un Trattato di Pace con gli Stati Uniti che metta fine definitivamente alla Guerra Coreana del 1950-53 (ad oggi vi è solo un armistizio tra le parti di quel lontano conflitto).

L'Italia. Uno dei problemi cruciali generati dallo smantellamento dell’impianto nucleare di Yongbyon, e in prospettiva degli altri, era la cosiddetta “*redirection*” ad attività civili degli scienziati e dei tecnici impiegati in tale complesso (sono stimati essere 3.000 – 5.000 persone). Il LNCV è da tempo coinvolto in uno speciale gruppo di lavoro internazionale, da esso diretto, che studia questa problematica comune a tutte le realtà in cui complessi nucleari militari-industriali e Ricerca&Sviluppo sono oggetti di un “*down-sizing*”, come ad esempio in Russia, o ad una attività di completa “*denuclearization/irreversible decommissioning*” come sarà appunto nel caso della Corea del Nord. Data la realtà economica e politica di quest’ultimo Paese, difficilmente si può pensare di commercializzare il potenziale delle tecnologie “*dual-use*” li sviluppate o progettate, potenziale che probabilmente è assente o con basso valore aggiunto, e bisogna invece orientarsi a reimpiegare il personale di Yongbyon in settori civili a basso contenuto tecnologico o in altre attività pubbliche statali. In un seminario internazionale svoltosi a Pechino il 5/6 marzo 2008, il LNCV ha proposto sostanzialmente due possibili soluzioni:

i) La creazione di un “Science Center” a Pyongyang sul modello di quelli esistenti ed operanti a Mosca e Kiev con lo scopo di gestire la situazione di emergenza e transizione che si creerebbe con il *disablement/dismantlement* del complesso di Yongbyon e di possibili altri ancora;

ii) La creazione di un Centro Internazionale di Eccellenza per la Penisola Coreana e tutta l’Asia nord-orientale indirizzato ad attività di Ricerca&Sviluppo di fisica atomica o delle particelle elementari che non sono proliferanti e che invece possono avere impieghi per applicazioni in campi quali la medicina nucleare, le radiografie industriali, la ricerca di materiali avanzati. Un modello per questo centro di Yongbyon potrebbe essere
quello realizzato in Giordania, vicino ad Amman, che raccoglie adesioni da diversi Paesi medio-orientali e noto come Synchrotron-light for Experimental Science and Application in the Middle East (SESAME).

Nel dicembre del 2008, la DGAO del Ministero Affari Esteri in collaborazione con il LNCV organizzerà il tradizionale seminario sulle questioni nord coreane cui saranno invitati, oltre al Sottosegretario MAE per l’Asia, i vice ministri degli affari esteri della Nord e Sud Corea aventi il portafoglio Europa. Per il 2008, il workshop sarà focalizzato principalmente sulla problematica della redirection degli ex-scientifici e tecnici nucleari militari e agli aspetti connessi ad attività economiche, industriali e commerciali “ad hoc” che settori privati europei, in particolare italiani, potrebbero realizzare in Corea del Nord.

Infatti la migliore garanzia per evitare una futura nuclearizzazione per scopi di deterrenza di questo Paese, è aprirlo agli investimenti stranieri e al mercato internazionale, riducendo così il senso di “insicurezza” ed isolamento di Pyongyang.

Per concludere si può certamente dire che il completo processo di denuclearizzazione della Corea del Nord sarà lungo, complesso e con varie fasi di avanzamento e retrocessione, ma il processo è iniziato e difficilmente potrà subire un “rolling back”.

Con questo obiettivo a lunga scadenza si può certamente convenire che l’insieme delle molteplici ed innovative iniziative rivolte alla Corea del Nord che la DGAO del MAE ha condotto in collaborazione con il LNCV a partire dal 2000 – che non si esauriscono, come si è qui evidenziato, solo nell’organizzazione annuale di Seminari “ad hoc”, ma contemplano anche la pianificazione e svolgimento di azioni di track-2 da parte del LNCV – testimoniano la costante attenzione del nostro Paese – che dal 2007 ha attivato l’accreditamento diplomatico secondario per Pyongyang all’Ambasciata d’Italia a Seoul – per la Penisola Coreana. L’Italia intende svolgere in tale scenario un ruolo di honest broker per il raggiungimento di una soluzione diplomatica pacifica alla questione nucleare e di un regime di Pace definitivo nella regione, nonché di mantenere una funzione propulsiva in seno alla Unione Europea e, quando fosse necessario, di “facilitatore” nelle relazioni bilaterali tra Pyongyang e Washington o Pyongyang e Seoul.
Capitolo 2.

Il programma nucleare iraniano e le negoziazioni E3/P5+1,

Maurizio Martellini – Riccardo Redaelli

2.1 L’avvio del programma nucleare iraniano e lo stop imposto dalla rivoluzione del 1979

L’interesse dell’Iran per la tecnologia nucleare era in realtà iniziato molto prima della nascita della repubblica islamica, addirittura negli anni '50 (nell’ambito dell’Atom for Peace Program degli Stati Uniti). Tuttavia fu solo alla fine degli anni '60, allorché gli Stati Uniti fornirono al paese un reattore di ricerca (un Thermal Research Reactor- TRR – da 5 Megawatt) che il programma nucleare iraniano ebbe impulso reale, con la costituzione della AEOI (Atomic Energy Organization of Iran). Nel 1968, nel tentativo di accelerare le negoziazioni per la fornitura di tecnologia nucleare, lo shah firmò il TNP, che venne ratificato dal paese nel 1970.

Negli anni successivi, il programma ricevette enormi finanziamenti governativi e rappresentò uno dei primari obiettivi della politica estera iraniana. L’obiettivo dello shah era ambiziosissimo: raggiungere nel più breve tempo possibile – e con il pieno sostegno statunitense, come amano ricordare oggi gli Iraniani,– una capacità produttiva pari ad addirittura 23.000 Mw tramite la realizzazione di oltre una ventina di centrali nucleari. A tal fine il governo iraniano stipulò infatti una pluralità di contratti e accordi con Stati Uniti (1974), Germania (1976), Sud Africa (1976) e Francia (1977) per la fornitura di impianti nucleari civili e per arrivare alla produzione autonoma di uranio arricchito. In questo senso vanno lette le acquisizioni di azioni di miniere di uranio in Namibia, l’accordo con il Sud Africa per la
fornitura di *yellowcake*\(^4\), e l’acquisizione di una quota di Eurodif, uno dei principali consorzi europei volti alla fornitura di uranio debolmente arricchito come combustibile per le centrali nucleari.

Questa attenzione verso il processo di arricchimento dell’uranio fece nascere il sospetto – suffragato anche dalla scoperta di accordi segreti con Israele nel campo missilistico e militare dopo la rivoluzione del 1979 – che lo *shah* nutrisse la celata ambizione di acquisire una capacità nucleare militare, per motivi di *status* politico e per rafforzare il ruolo del paese quale “guardiano del Golfo”. Il fatto che Tehran fosse il principale alleato di Washington nella regione permise tuttavia allo *shah* di proseguire nella propria ambigua politica nucleare; è infatti del 1977 un accordo fra Tehran e Washington, col quale si prevedeva la cessione da parte statunitense di impianti di arricchimento e riprocessamento in cambio dell’acquisto da parte iraniana di 8 reattori nucleari in grado di fornire una potenza pari a 8000 Mw per un valore di 15 miliardi di dollari. Da qui l’accusa di un evidente *dual standard* statunitense, data la rigidità della posizione odierna di Washington e dell’UE, non sono disposti ad accettare che l’Iran disponga neppure di un impianto d’arricchimento volto non alla produzione industriale bensì alla sola ricerca. Tale possibilità viene infatti ritenuta estremamente rischiosa per la stabilità regionale.

Con la rivoluzione del 1979 e la seguente guerra con l’Iraq – scatenata da Saddam Husseyn nel 1980 – il programma nucleare iraniano subì un lungo arresto. Il paese era isolato e completamente assorbito dallo sforzo bellico, e non vi erano risorse per ricerche così costose come quelle nucleari. Anzi, nei primi anni ’80, preziosi equipaggiamenti e materiali della centrale in costruzione di Bushehr furono cannibalizzati per l’agricoltura o addirittura impiegati nelle trincee scavate dall’esercito iraniano.


\[^4\] Ottaossido di triuranio (\(U_3O_8\)), il risultato di uno dei passaggi della lavorazione dell’uranio naturale.

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Mosca avrebbe completato quella centrale, e ne avrebbe realizzate altre tre, nell’ambito di un ambizioso progetto del governo iraniano per ridurre il consumo interno di petrolio e gas naturale tramite la costruzione di numerose centrali nucleari, così da liberare importanti risorse di idrocarburi per l’esportazione⁵.

Nonostante le fortissime pressioni esercitate da Washington sulla Russia e su altri paesi - che portarono al blocco dei negoziati per la fornitura di tecnologie nucleari considerate dual use con Cina e Argentina - la centrale di Bushehr è oggi pressoché terminata; un accordo siglato dopo estenuanti trattative all’inizio del 2005 prevede anche la fornitura delle barre di uranio necessarie al suo funzionamento (e per il ritiro del combustibile esausto).


2.2 I recenti sviluppi del programma nucleare iraniano⁶

In questo paragrafo prenderemo in esame gli sviluppi più recenti del ventennale programma nucleare iraniano, a partire dall’agosto del 2002, quando il National Council of Resistance of Iran (NCRI) rivelò all’Agenzia Internazionale per l’Energia Atomica (AIEA) l’esistenza di due impianti nucleari, non noti all’Agenzia, costruiti presso Natanz e Arak, dedicati rispettivamente all’arricchimento dell’uranio e alla produzione di acqua pesante da utilizzarsi per uno specifico reattore in fase di costruzione, concentrandosi in particolare sugli accordi stipulati e sul processo negoziale condotto dai 3UE/UE, volto a convincere l’Iran a sospendere le fasi più sensibili del suo programma nucleare – ovvero l’arricchimento dell’uranio, le attività di R&S, la costruzione del reattore ad acqua pesante ad Arak, la ricerca e la produzione di centrifughe per l’arricchimento dell’uranio, ecc. – in cambio di incentivi economici e politici. Come conseguenza della continua violazione dei medesimi accordi, si è

⁵ Vedi appendice sulla politica energetica iraniana.
⁶ In un’appendice separata riporteremo i principali passi del programma nucleare iraniano, limitandoci qui a esaminare il periodo recente.
avuto nel 2006 il differimento al Consiglio di Sicurezza (CS) delle Nazioni Unite da parte dell’AIEA e le successive Risoluzioni n. 1696 e n. 1737 del 2006. In questo spirito, i principali punti di riferimento cronologici sono stati:

- 14 agosto 2002 – denuncia del programma nucleare clandestino a Natanz ed Arak da parte del National Council of Resistance of Iran (NCRI);
- 21 ottobre 2003 – “Accordi di Tehran” tra Francia, Inghilterra, Germania, UE (la cosiddetta formula 3UE/UE) e Iran, in cui quest’ultimo concorda di sospendere volontariamente, e temporaneamente, il processo di arricchimento dell’uranio, anche a livello R&S, e di impegnarsi a chiarire e risolvere tutti gli aspetti pendenti con l’AIEA, così come di firmare l’Additional Protocol (AP) delle Salvaguardie della AIEA;
- 18 dicembre 2003 – l’Iran firma ma non ratifica l’AP delle Salvaguardie, pur mettendolo de facto e voluntariamente in opera;
- 24 giugno 2004 – l’Iran informa i 3UE/UE di voler riprendere l’attività di arricchimento dell’uranio, “sospendendo” di fatto l’Accordo di Tehran (dal punto di vista legale non è questa una violazione, in quanto l’Iran non si era impegnato a sospendere definitivamente le sue attività di arricchimento);
- 15 novembre 2004 – “Accordo di Parigi” tra i 3UE/UE e l’Iran, in cui le parti si impegnano nuovamente ad avviare un ampio negoziato che risponda alle varie esigenze di tutte le parti, durante il quale l’Iran annuncia di essere pronto a sospendere tutte le attività di arricchimento, comprese quelle di R&S. Secondo molti osservatori internazionali, questo è stato l’apice del processo negoziale, in cui le posizioni di tutte le parti si sono maggiormente avvicinate tra loro;
- 5 agosto 2005 – “Primo Pacchetto” di incentivi economico-politici da parte dei 3UE/UE;
- 6 agosto 2005 – L’Iran rigetta la proposta europea;
- 8 agosto 2005 – L’impianto di conversione dell’uranio a Isfahan riprende a funzionare per preparare una particolare forma gassosa dell’uranio (l’UF₆) che dovrà poi essere immessa nelle centrifughe di Natanz per il successivo processo di arricchimento;
- 10 gennaio 2006 – L’Iran rimuove i sigilli dell’AIEA a Natanz e ricomincia l’attività pilota di ricerca e sviluppo per l’arricchimento dell’uranio;
4 febbraio 2006 – Risoluzione dell’AIEA che decreta (con 27 voti a favore, 3 contrari e 5 astenuti) il differimento del “file” iraniano al CS dell’ONU;

14 febbraio 2006 – L’Iran ripristina l’attività di arricchimento e, in maniera incrementale, si avvia nei mesi seguenti a operare con l’intera cascata di 164 centrifughe (di tipo P1, prima generazione di centrifughe su modello pachistano), già predisposte nell’impianto pilota di Natanz, ottenendo *Low Enriched Uranium* (LEU) al 3.6%;

6 giugno 2006 – Secondo “pacchetto” di incentivi economico-politici presentato da Javier Solana a Tehran a nome dei P5+1 (cioè dei 5 membri permanenti del CS dell’ONU più la Germania), e, quindi, anche con il supporto “indiretto” dell’America. Il pacchetto contiene anche esplicite minacce nel caso in cui Tehran non accetti questa proposta;

31 luglio 2006 – Risoluzione del CS dell’ONU, n. 1696, che chiede, in base all’articolo 40 del Capitolo VII della Carta delle Nazioni Unite, di sospendere, entro il 31 agosto 2006, tutte le attività di arricchimento – incluse quelle di R&S – e di chiarire e risolvere tutte le questioni rimaste pendenti con l’AIEA;

22 agosto 2006 – Risposta iraniana alla proposta dei P5+1, in cui si evincerebbe che l’Iran è pronta a riprendere i negoziati con i 3UE/UE, di discutere in questa sede la forma e la modalità della sospensione dell’arricchimento, ma che ciò non può essere una pre-condizione, come invece vorrebbe la comunità internazionale;

31 agosto 2006 – Il Direttore Generale dell’AIEA pubblica il suo rapporto sullo stato di implementazione dell’Accordo delle Salvaguardie con l’Iran, confermando che Tehran non ha sospeso l’attività di arricchimento, non ha ratificato l’AP e non ha ancora risolto alcuni cruciali aspetti del suo passato programma nucleare, nonostante ciò fosse stato richiesto dalla Risoluzione del CS n. 1696;

28 settembre 2006 – Si conclude una fase di *talks-for-talks* tra l’UE e l’Iran (l’UE è rappresentata da Javier Solana) che, pur non presentandosi come una vera negoziazione (ma una sorta di “pre-negoziazione informale”), vuole essere un estremo tentativo da parte dell’UE per “salvare la faccia ad entrambi”, cioè ottenere una promessa di sospensione per qualche mese (2-3 mesi) da parte dell’Iran. L’obiettivo è quello di sedere nuovamente al tavolo negoziale partendo dall’offerta di giugno, dando all’Iran la possibilità di presentare alla Comunità Internazionale – e alla sua opinione
pubblica – l’atto di aver sospeso volontariamente e temporaneamente l’attività di arricchimento come risultato dei colloqui (e non come pre-condizione) con gli europei e non come conseguenza delle pressioni esterne. Purtroppo questo pre-negozio fallisce, portando così a un’inevitabile seconda Risoluzione del CS dell’ONU;

- 23 ottobre 2006 – L’Iran avvia, nell’impianto pilota di Natanz, una seconda cascata di 164 centrifughe iniziando a immettere gas UF$_{6}$. Questa seconda cascata non è stata connessa alla prima fino alla fine del 2006;

- 14 novembre 2006 – Il DG dell’AIEA riferisce che l’Iran non ha terminato le attività di arricchimento, come richiesto dalla Risoluzione n. 1696, ma ha invece arricchito, tra il 13 agosto e il 2 novembre, 34 Kg di gas UF$_{6}$ sotto la soglia del 5%. Inoltre, l’Iran non ha ancora fornito all’Agenzia i chiarimenti e le risposte richieste e non ha ancora ratificato l’AP;

- 23 dicembre 2006 – “Seconda Risoluzione” del CS dell’ONU, n. 1737, che chiede, in base all’Articolo 41 del Capitolo VII della Carta, di sospendere entro il 21 febbraio 2007 tutte le attività legate all’arricchimento dell’uranio, di fermare la costruzione del reattore di Arak, di rafforzare la sua cooperazione con la AIEA per chiarire e risolvere tutte le questioni pendenti e di ratificare l’AP. Questa risoluzione, essendo basata sull’Articolo 41, impone a tutti gli Stati di bloccare importazioni ed esportazioni, da e verso quel Paese, di materiali e tecnologie connessi sia all’attività di arricchimento dell’uranio e di riprocessamento, sia ai reattori ad acqua pesante, così come ai sistemi missilistici. Tuttavia, sono esenti da questo tipo di interdizione le tecnologie nucleari relative alla fase di completamento del reattore di fabbricazione russa di Bushehr, così come l’importazione dalla Russia del suo combustibile nucleare, già in forma di barre. La Risoluzione, inoltre, chiederà agli Stati di congelare tutti gli assets finanziari all’estero associati a 12 persone giuridiche e a 10 organizzazioni iraniane riportate in un Annex della Risoluzione;

- 24 dicembre 2006 – Il Presidente iraniano rigetta i termini della Risoluzione dichiarando che Tehran non sosponderà l’arricchimento dell’uranio ma che, invece, accelererà il suo programma volto a istallare 3.000 centrifughe a Natanz entro febbraio 2007 e minaccia di rivedere la sua cooperazione con l’AIEA;
22 gennaio 2007 – Dopo pressione dei gruppi più oltranzisti, il governo iraniano nega l’ingresso di 38 ispettori dell’AIEA;

19 febbraio 2007 – La Russia annuncia un ritardo nei lavori di completamento della centrale di Bushehr, giustificandosi con il mancato pagamento di più di 70 milioni di dollari da parte Iraniana. Tehran tuttaviva smentisce di non aver onorato le scadenze dei pagamenti;

22 febbraio 2007 – dopo la fine dei 60 giorni accordati all'Iran per sospendere il proprio programma di arricchimento, l'AIEA in un report afferma che l'Iran lo ha al contrario aumentato. Il rapporto spiana la strada a nuove e più severe sanzioni contro la repubblica islamica. L’agenzia afferma inoltre che Tehran continua a costruire tanto un reattore che utilizzerà acqua pesante quanto un impianto di produzione di acqua pesante, sempre in violazione delle risoluzioni del UNSC;

12 marzo 2007 – la Russia annuncia nuovi ritardi nella fine dei lavori del reattore di Bushehr, senza tuttaviva specificare una data di completamento;

27 Agosto 2007 – con una mossa a sorpresa, il Direttore generale dell’AIEA, El-Baradei, sigla un accordo con il governo iraniano sulle modalità di risoluzione e chiarimento delle cd. Sei Outstanding Questions. Con questa mossa, l'Agenzia ridava centralità all’indagine tecnica, prescindendo dalle decisioni politiche del UNSC e indebolendo la strategia statunitense di isolamento totale iraniano. Vista come un azzardo da parte di alcuni esperti – dato che il fallimento di questo accordo avrebbe certo minato l’autorità di El-Baradei – per USA, Israele e per alcuni paesi europei questo accordo rappresentava una sfida di El-Baradei, e offriva nuove dilazioni temporali a Tehran;


22 gennaio 2008 – i paesi del P5+1 (ossia i cinque paesi permanenti del UNSC più la Germania) si accordano sul testo di una nuova risoluzione del Consiglio di Sicurezza che verrà presentata agli altri paesi. Si tratta di un compromesso che accentua le sanzioni, ma non introduce reali sanzioni economiche internazionali;

3 marzo 2008 – Dopo lunghe negoziazioni con Russia e Cina, lo UNSC approva una terza risoluzione sanzionatoria contro Tehran, che rafforza l’embargo di prodotti *dual use* e riduce la mobilità di tecnici, diplomatici e funzionari russi. Si tratta di un forte messaggio a Tehran. Nonostante le reazioni del presidente Ahmadinejad, al solito irritante, si moltiplicano i segnali di crescenti perplessità interne alle varie fazioni del regime. Le sanzioni finanziarie decise dal Tesoro statunitense e le misure adottate dal UNSC stanno effettivamente colpendo l’economia iraniana, con pesanti contraccolpi sull’inflazione, sugli investimenti e sul cruciale programma di ammodernamento della vetusta industria estrattiva iraniana;

2 maggio 2008 – i P5+1 si accordano per un nuovo pacchetto di proposte a Tehran in cambio della sua rinuncia al programma di arricchimento. La proposta, non resa pubblica nei suoi contenuti, rafforza e specifica la vecchia proposta E3/Eu del 2006, rigettata da Tehran;
26 maggio 2008 – Un nuovo rapporto dell’AIEA usa toni sorprendentemente duri con l’Iran, accusando il paese di negare e nascondere informazioni cruciali per chiarire il file nucleare. Il tono dell’AIEA, per anni accusata di essere troppo prudente e troppo morbida con Tehran, indica la crescente frustrazione degli ispettori e dei vertici dell’Agenzia: nonostante gli accordi passati e le manifestazioni di collaborazione, l’Iran continua a non assumere un atteggiamento di piena apertura verso l’Agenzia;

14 giugno 2008 – Il nuovo pacchetto di incentivi proposto dagli E3/EU all’Iran viene consegnato dall’Alto rappresentante europeo Solana a Tehran, con nuove e meglio dettagliate compensazioni all’Iran, e soprattutto con l’idea di un qualche meccanismo freeze-for-freeze – ovvero la sospensione temporanea per un periodo fissato (i P5+1 avevano proposto 6 settimane) delle attività di arricchimento e riprocessamento in cambio dell’interruzione di ulteriori sanzioni -. Il presidente Ahmadinejad risponde sprezzantemente all’offerta, ma non così altri esponenti iraniani;

2 luglio 2008 – il ministro degli esteri iraniano Mottaki, a New York, in un incontro con una dozzina di giornalisti americani ipotizza che l’Iran possa rispondere favorevolmente alla formula proposta il mese scorso dal negoziatore Solana, formula nota come “freeze for freeze”. Successivamente l’ex ministro degli esteri e senior advisor del Leader supremo ‘Ali Khamane’i, ‘Ali Akbar Velayati, sottolinea la preminenza di Khamane’i nella formulazione della strategia politica estera del paese; il rifiuto delle posizioni radicali del presidente Ahmadinejad; il concetto che l’Iran dovrebbe negoziare, in quanto “if those who act against our interests want us not to accept the proposal, then our expedience is in accepting it”. Inoltre nella sua intervista al quotidiano conservatore Jomhouriye Eslami, Velayati non ripete l’usuale “mantra” dell’inalienabile diritto dell’Iran all’arricchimento dell’uranio. Due giorni dopo lo stesso Velayati, in una trasmissione televisiva, spiega l’intervista stessa, sottolineando come i suoi riferimenti non fossero al processo di arricchimento, bensì al fatto che la negoziazione con i P5+1 fosse “accettabile”;

9 luglio 2008 – L’Iran effettua dei test di lancio di missili a lungo e medio raggio durante delle esercitazioni militari. I test sono una dimostrazione delle capacità di reazione iraniana contro attacchi militari statunitensi o israeliani. Secondo gli stessi iraniani, l’Iran ha ormai istallato 5-6000 centrifughe – anche se vi sono molti dubbi sulla loro
reale operabilità – e aumenta il numero di centrifughe di nuova generazione IR-2, molto più efficienti rispetto alle precedenti;

- 12 agosto 2008 – L'amministrazione Bush impone nuove sanzioni economiche unilaterali contro cinque importanti compagnie iraniane, accusate di favorire lo sviluppo di un programma nucleare militare clandestino e impedisce ogni rapporto economico con esse, pena pesanti sanzioni finanziarie. Sempre nell'estate, il Congresso e il Senato americano discutono di un inasprimento dell'ex ILSA, ora ISA (Iran Sanctions Act), che colpisce chiunque cooperi con l'Iran nel settore degli idro-carburi per una somma superiore ai 20 milioni di dollari;

- Settembre 2008: alcuni report d'intelligence accusano l'Iran di aver ripreso il proprio programma clandestino, e in particolare di aver spostato importanti quantità di uranio debolmente arricchito (che potrebbero permettere all'Iran – se sufficientemente processate – di preparare uranio altamente arricchito – HEU - sufficiente per diversi ordigni atomici) portandole in siti non sottoposti al controllo dell'AIEA. Queste informazioni sono però state informalmente criticate da vari analisti e da funzionari dell'Agenzia, dato che presentano numerose imprecisioni e contraddicono quanto l'Agenzia sostiene, ossia che tutto l'uranio debolmente arricchito – LEH – sia monitorato dai propri ispettori.

2.3 Una riflessione sulle trattative E3 e sui limiti delle attività di non-proliferazione della comunità internazionale

Questa cronologia, se letta basandosi non tanto sui fatti realmente accaduti ma su quelli che si potevano ipotizzare e che non si sono realizzati, dice molto sui veri scopi del programma nucleare iraniano, sugli errori, o le ingenuità, del processo negoziale tra l'Iran e i 3UE/UE e su un possibile set di raccomandazioni per un eventuale prossimo round di negoziati.

I tratti essenziali di questo lungo processo negoziale con l'Iran sono sostanzialmente i seguenti:
1) Il processo negoziale ha avuto una dinamica oscillante “a pendolo”, con concessioni e poi ritrattazioni da parte dell’Iran, ma che non ha mai teso a raggiungere un vero punto di rottura con il regime di non proliferazione e con l’AIEA (come invece è stato nel caso del programma nucleare della Corea del Nord, fuoriuscita dal TNP il 10 aprile 2003). Inoltre, il processo è stato certamente molto lungo; ciò non è imputabile solo alla parte iraniana ma anche agli europei che, di volta in volta, hanno “aggiustato il tiro” e cercato sia compromessi di varia natura sia consenso nella “casa Europa”, come anche sull’altra sponda transatlantica.

2) Dal punto di vista della confidence building, si è assistito a un interessante fenomeno inverso: gli iraniani, che erano indecisi e timorosi all’inizio della fase negoziale (diciamo prima dell’Accordo di Parigi del novembre 2004), hanno poi preso sempre maggior confidenza nel “bargaining chips”; gli europei, invece, l’hanno fondamentalmente persa, dovendosi confrontare con una parallela negoziazione “interna” e transatlantica, tra i suoi membri e con l’alleato americano. Inoltre, il fatto che l’AIEA non abbia mai provato l’esistenza di una “nuclear smoking gun” ha diminuito, all’interno del fronte europeo, il senso comune di urgenza e priorità alla base delle negoziazioni con Tehran, soprattutto alla luce di altre crisi più “immediate” come quella afgana, irachena e quella legata al processo di pace israelo-palestinese.

3) La negoziazione, fin dall’inizio, ha contravvenuto alla regola aurea che dovrebbe stare alla base di ogni processo diplomatico particolarmente complesso: lasciare gli aspetti tecnici alla fine, privilegiando il contesto politico rispetto a quello particolare e specifico. In altre parole, se ci è consentito dirlo, la metodologia negoziale perseguita, forse inconsapevolmente, dall’Europa è più da disarmament talks (la continua enfasi sulla sospensione dell’arricchimento, che per l’Europa e gli Stati Uniti volava dire cessazione permanente e poi smantellamento irreversibile delle centrifughe a Natanz, mentre per l’Iran significava solo sospensione temporanea e volontaria da negoziare in concomitanza con il pacchetto degli incentivi) che da vero processo negoziale volto a inserire la “questione iraniana” nel nuovo ordine di sicurezza internazionale che si è venuto a creare nel Medio Oriente dopo la guerra afgana e irachena. In altre parole, facendo perno solo sugli aspetti connessi alla non proliferazione nucleare e alla proibizione di un certo tipo di attività nucleare legato al ciclo del combustibile, tutte le crisi nucleari a livello mondiale – partendo dalla Corea del Nord, passando per India e Pakistan, per finire all’Iran –
diventano identiche, togliendo così la specificità politica a ogni crisi. Dobbiamo infatti prendere atto che la dottrina del “juche”, alla base del regime nord coreano di Kim Jong Il, non ha nulla a che spartire con quella iraniana del “velayat-e faqih”, che regge il regime teocratico a Tehran, sebbene gli steps che la comunità internazionale deve intraprendere per evitare la proliferazione nucleare siano gli stessi, sia per la Corea del Nord che per l'Iran.

4) La negoziazione tra i 3UE/UE e l'Iran, come si è già osservato nel punto 3, ha presentato obiettivi che non avevano lo stesso significato per europei e iraniani, e ha sempre evitato di introdurre la questione regionale (cioè riconoscere all'Iran il ruolo che di fatto ha assunto in Medio Oriente dopo la sconfitta dei Talebani e di Saddam Hussein). In particolare, nei “pacchetti” presentati dall'Europa all'Iran nelle estati 2005 e 2006, non vi era menzione alcuna di offerte di “garanzie di sicurezza”, come invece uno Stato che si sente isolato, minacciato e ripudiato vorrebbe certamente vedere. Solo alla fine di questo lungo (e certamente non concluso) processo negoziale, con l'offerta del giugno 2006, l'Europa ha cercato di correggere parzialmente i loopholes della sua precedente negoziazione, ma ormai era troppo tardi e la fiducia reciproca era stata completamente spesa da entrambe le parti.

La mancanza di attenzione verso il quadro regionale è parsa sempre più evidente con il peggioramento della situazione in Afghanistan e con i catastrofici anni seguiti all'invasione dell'Iraq da parte delle truppe anglo-americane. I timori delle reazioni iraniane regionali a un attacco contro i propri siti nucleari ha frenato molti analisti e responsabili politici e militari in Occidente, dando nel contempo un senso di pericolosa overconfidence alla dirigenza iraniana, e in particolare ai gruppi ultra-radicali. Si è percepito così l'errore di non aver ‘allargato il quadro della negoziazione’, come offerto dagli stessi iraniani nel 2003 con la famosa offerta avanzata tramite l'Ambasciata svizzera e rigettata sdegnosamente dall'Amministrazione Bush.

5) Per quanto concerne i negoziatori non-iraniani e non europei, il mancato coinvolgimento nel formato negoziale di Russia e Stati Uniti limitava sin dal principio la possibilità di condurre un processo credibile e completo. Inoltre, le offerte occasionalmente fatte da Washington e Mosca erano volte più a soddisfare le loro “agende interne”, che a risolvere la crisi iraniana. Ad esempio, alla base dell'offerta Russa di arricchire l'UF₆ iraniano sul proprio suolo vi era piuttosto l'idea di Putin di trasformare la
Russia in una superpotenza globale basata sulla fornitura di risorse energetiche e relativi servizi, inclusa l'energia nucleare, piuttosto che un concreto contributo al processo negoziale con l'Iran. I recenti eventi dell'estate 2008 mostrano in ogni caso come il caso iraniano può divenire tatticamente ostaggio delle relazioni fra le diverse maggiori potenze (USA e Russia in particolare).

6) La crisi di consenso dell'Amministrazione Bush e la corsa elettorale hanno posto un freno ai sostenitori di una politica aggressiva e determinata contro l'Iran, sia per il nucleare sia per l’assetto regionale. Non solo il partito repubblicano e il suo candidato, John McCain, si sono volutamente distanziati da Bush, ma anche messo la sordina alle accuse contro l'Iran. L’argomento rischia infatti di essere controproducente, dato che da ormai sei anni Washington cerca inutilmente di fermare il programma nucleare della repubblica islamica. Il già citato rapporto NIE di fine 2007, inoltre, ha oggettivamente indebolito il fronte dei favorevoli a un attacco preventivo: se vi sono ancora diversi anni prima che l'Iran riesca a dotarsi di un ordigno nucleare – e sempre che effettivamente stia cercando di farlo – perché non proseguire sulla strada della diplomazia e delle pressioni economiche?

7) L’esclusione della variabile sunnita nel bilancio dei pro e contro per la realizzazione di un arsenale nucleare iraniano è stato senz’altro un ulteriore elemento di debolezza del negoziato. Infatti, la questione chiave da porre all’Iran è: una “bomba shiita” è coerente con i suoi obiettivi di sicurezza nazionale? In tal senso, il processo negoziale è stato segnato sin dal principio dalla mancanza di iniziative di track-2 volte a presentare l’esperienza della Guerra Fredda e in particolare, l’escalation della deterrenza nucleare. In quest’ottica, una “bomba shiita” potrebbe indurre un effetto domino nei Paesi arabi sunniti, con il rischio di introdurre una dimensione nucleare nella latente e mai sopita fitna tra shiiti e sunniti. In particolare, la percezione di un inevitabile Iran nucleare potrebbe infatti tradursi in una "corsa al nucleare", soprattutto da parte dei Paesi del Gulf Cooperation Council (GCC), che comporterebbe poi l’inevitabile avvio di un crescente processo di “securitization” iraniano – non soltanto nucleare – drenando in tal modo risorse economiche, sociali e umane, altrimenti dedicate allo sviluppo del Paese, spingendolo sempre più nella direzione radicale e ultra-conservatrice.

8) Infine, il comportamento dei negoziatori iraniani, caratterizzato –come si è detto - da ambiguità, desiderio alterno di accomodamento/confronto, assenza di una reale
intenzione di porre fine alla collaborazione con l'AIEA e, al limite, di denunciare il TNP stesso, sottintende le seguenti valutazioni strategiche:

i) la scelta nucleare, pur essendo un elemento di legittimazione del regime teocratico sostenuto da tutte le forze politiche, costituisce un terreno di forte scontro interno sui metodi e sulle tattiche necessari per attuarla e giocarla come uno degli elementi del negoziato con l’“esterno”;

ii) se inizialmente esisteva, nella leadership iraniana, il desiderio di creare una sorta di “deterrente nucleare virtuale” e di predisporre tutti i pezzi del “dominio tecnologico nucleare”, dopo quattro lunghi anni di negoziazione con i 3UE/UE gli iraniani hanno imparato ad amare la loro bomba virtuale, e ora il rischio di voler superare la reale “threshold nucleare”, che separa il civile dal militare, è molto più alto che all’inizio (pertanto solo una “nuova offensiva diplomatica” di ampio respiro e contenuto, che coinvolga tutti gli attori precedentemente assenti nel negoziato, potrà scongiurare tale rischio);

iii) Infine, l’opinione pubblica iraniana è stata intenzionalmente tenuta all’oscuro delle conseguenze che colpirebbero il Paese nel caso in cui divenisse un nuovo Nuclear Weapons State (NWS) in Medio Oriente; a tal proposito, l’Occidente avrebbe dovuto forse attuare, sin dall’inizio del processo negoziale, una forte campagna mediatica in lingua farsi per rendere noti i “costi” per la popolazione iraniana di una tale opzione nucleare.

2.4 Il Perché della scelta nucleare: giustificazioni economiche e convenienze politiche

Per sviluppare una realistica strategia negoziale, è necessario comprendere le complesse e variegate motivazioni e preoccupazioni iraniane, alla base del programma nucleare del Paese, che possono essere riassunte nei seguenti punti:

- La necessità di assicurarsi una capacità di deterrenza nucleare anche virtuale volta a dissuadere i due Nuclear Weapons States (NWS) che Tehran percepisce come
possibili nemici, vale a dire Stati Uniti e Israele e, in prospettiva, per “egualizzare strategicamente” la “bomba sunnita” del Pakistan (che però non rappresenta una minaccia strategica diretta) e, un domani, dell’Arabia Saudita. Infatti, nel dicembre 2006, i Paesi del GCC hanno annunciato il loro interesse a sviluppare un programma nucleare civile congiunto e hanno chiesto assistenza all’AIEA per uno studio di fattibilità. È evidente che tale mossa rappresenta un chiaro segnale a Tehran che una “bomba sciita” in Medio Oriente non possa essere accettata e rappresenti un’ulteriore dimostrazione di come l’acquisizione di un deterrente nucleare da parte iraniana aumenterebbe, anziché ridurre, la vulnerabilità del Paese. Inoltre, è irrealistico ritenere che l’Iran possieda le risorse tecniche ed economiche per sviluppare una consistente capacità nucleare reattiva (second nuclear strike capability) in un orizzonte di breve periodo. Al contrario, il tentativo da parte iraniana di acquisire un potenziale nucleare bellico, o semplicemente la percezione che Tehran sia arrivata al “punto di non ritorno”, potrebbe favorire un attacco preventivo missilistico o aereo contro i suoi impianti nucleari.

- La percezione delle minacce regionali alla propria sicurezza. È indubbiamente vero che l’Iran deve affrontare una pluralità di (potenziali) sfide alla propria sicurezza, dato che il Paese è al centro di un vasto arco di instabilità regionale. Inoltre, Tehran potrebbe pensare di capitalizzare e consolidare, con una geopolitica rafforzata da un deterrente nucleare, l’influenza e il ruolo che sta assumendo nella regione, anche alla luce della debolezza strutturale dell’aeronautica militare del Paese, di gran lunga inferiore a quella dei Paesi arabi del Golfo, del Pakistan e, ovviamente, di Israele. Tuttavia, questo possibile calcolo strategico potrebbe avere un effetto destabilizzante in quanto, come si è osservato precedentemente, potrebbe generare un “effetto domino nucleare” in tutto il Medio Oriente.

- Il nucleare come epifenomeno nazionalista. Con il passare del tempo, e con il susseguirsi di minacce, pressioni esterne e ispezioni dell’AIEA, in Iran il problema del nucleare viene vissuto sempre meno come una questione tecnologica, di sicurezza energetica o di modernizzazione, per assumere invece una crescente dimensione nazionalista e di difesa dei diritti iraniani di fronte alla comunità internazionale. Come si è ampiamente discusso nel primo capitolo, l’Iran è un Paese fortemente nazionalista, posseduto dall’idea di essere discriminato, di dipendere, un domani, dalle forniture
di combustibile nucleare dall’estero – una volta che abbia ottenuto una sua capacità di produzione di energia nucleare (ecco perché vuole sviluppare il “suo” combustibile nucleare) – e di non essere riconosciuto come potenza regionale. È sbagliato e pericoloso ritenere che l’opzione nucleare interessi solo i conservatori (moderati o radicali); al contrario, la stragrande maggioranza degli iraniani e di tutte le forze politiche (anche quelle legate ai riformisti) chiede al governo di resistere alle pressioni esterne che vorrebbero che il Paese rinunciasse ai suoi diritti nucleari di Non Nuclear Weapon State (NNWS) del TNP. La comunità internazionale, poi, non è riuscita a spiegare all’opinione pubblica iraniana i costi politici ed economici che il Paese dovrà affrontare nel caso in cui decidesse di proseguire il processo di arricchimento dell’uranio o, un domani, iniziare un’attività di riprocessamento del combustibile spento. L’accordo di Parigi e, soprattutto, le offerte fatte a Tehran dai 3UE/UE del giugno 2006 e dai P5+1 del giugno 2008 hanno evidenziato come la comunità internazionale non si opponga al fatto che Tehran sviluppi una capacità nucleare civile, ma ritiene fondamentale che il combustibile nucleare venga fornito dall’estero sotto Salvaguardia dell’AIEA. Come vedremo nell’ultimo paragrafo, l’opzione migliore è che si crei un Consorzio internazionale dei fornitori di arricchimento (che includa eventualmente il settore privato) con “garanzie di sicurezza” supportate dall’AIEA e in cui l’Iran potrebbe entrare solo come shareholder commerciale sul modello EURODIF francese.

- L’energia nucleare come risposta al crescente fabbisogno energetico interno. Il governo iraniano ha stimato che la domanda di elettricità crescerà fino al 2015 dell’8% su base annua e che, se parte di essa (e più precisamente il 10%, pari a 6000MW) sarà fornita da reattori nucleari del tipo di quello di Bushehr, ciò permetterà di

7 Avere come fornitore di servizi di arricchimento un solo Paese con tale capacità potrebbe non essere accettabile per l’Iran per questioni di sicurezza energetica, come già dimostrato in passato. La Russia, infatti, aveva suggerito (alla fine del 2005 e inizio 2006) che avrebbe potuto arricchire su suolo russo il gas UF₆ prodotto dall’Iran, restituendo il LEU così ottenuto già in forma di barre impiegabili direttamente come combustibile nucleare; il tutto, ovviamente, da svolgersi sotto il regime dell’Additional Protocol. Inoltre, la Russia si era anche offerta di riprendere il combustibile nucleare spento per riprocessarlo, alla fine del ciclo di vita, sempre nel proprio territorio. In questa proposta l’Iran avrebbe avuto il solo ruolo di shareholder commerciale e non di partner tecnologico.

8 L’Iran infatti rimane shareholder di EURODIF, il cui 25% è controllato dalla SOFIDIF, società franco-iraniana in cui l’Iran partecipa al 40%.
risparmiare circa 10 miliardi di metri cubi di gas naturale all’anno. Se questo gas fosse reimmesso nei depositi petroliferi del Paese ciò permetterebbe di incrementare l’estrazione del greggio a 30 milioni di barili l’anno. Tenendo poi presente che un recente studio dell’Accademia Nazionale delle Scienze americana\(^9\) stima che l’Iran produca oggi circa 3,7 milioni di barili al giorno, 300.000 in meno della quota fissata dall’OPEC (pari a una perdita annuale di circa 5,5 miliardi di dollari), si vede che l’opzione dell’energia nucleare civile potrebbe essere un percorso obbligato per il governo iraniano. Tuttavia, queste stime possono giustificare la necessità di ricorrere all’energia nucleare ma non quella di gestire autonomamente l’intero ciclo del combustibile nucleare. Infatti, l’Iran potrebbe non avere sufficiente uranio naturale per sostenere la vita media di 6 reattori di potenza di circa 1000MW ciascuno (come quello di Bushehr). Un reattore di questa potenza consuma infatti circa 160 tonnellate di uranio naturale all’anno; assumendo quindi, per eccesso, una vita media di 50 anni, un tale reattore consumerebbe in totale 8.000 tonnellate di uranio naturale, 6 reattori 48.000. Le Reasonably Assured Resources (RAR) di uranio delle miniere iraniane di Bandar Abbas, Ardabil e Yazd sono state dichiarate essere pari a circa 36.000 tonnellate, il che significa che le risorse provate di uranio sono di diversi ordini di grandezza inferiori (diciamo tra le 20.000 e le 30.000 tonnellate) e quindi che difficilmente l’Iran potrà in futuro garantire autonomamente la fornitura di combustibile per 6.000MW di energia nucleare.

2.5 Aspetti tecnici del programma iraniano: alcune analisi

Il programma nucleare iraniano è caratterizzato da un’estrema complessità, ramificazione ed eccellenza che dimostra essenzialmente che:

1) non è nato on the spot ma grazie all’acquisto dallo shopping center mondiale di tecnologie nucleari, permesse e non, da Stati nucleari compiacenti. Inoltre, il

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programma iraniano ha più di vent'anni ed era già stato avviato dallo Shah, con sostanziali contributi a opera degli stessi scienziati e tecnici iraniani;

2) contemplato nel suo insieme, mostra di essere coordinato e interdipendente. Come l'AIEA ha evidenziato, si va dall'impianto di Isfahan per la purificazione/conversione dell'uranio di miniera (come detto, l'Iran ha RAR d'uranio per 36.000 tonnellate), all'impianto di arricchimento a Natanz, al sito di stoccaggio dei rifiuti radioattivi e nucleari a Anarak (si veda il box riguardante i principali siti nucleari conosciuti e regolarmente ispezionati dall'AIEA nell'ambito dell'Accordo delle Salvaguardie INFCIRC/153 tra l'Iran e l'AIEA – l'Iran ha ratificato il TNP il 2 febbraio 1970 e l'Accordo il 15 maggio 1974). In termini di complessità ed estensione, tale programma non presenta somiglianze con i programmi (civili) di molti NNWS – ad esempio, molti NNWS non hanno impianti di arricchimento per l'uranio – ma presenta analogie con quelli (civili e militari) dei nuovi NWS (ad esempio il Pakistan).
Figura 1: Principali siti nucleari iraniani

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<td>Research Center</td>
<td>Waste Handling Facility (WHF)</td>
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<td>(TNRC)</td>
<td>Tehran Research Reactor (TRR), 5 MW</td>
<td>Operativo</td>
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<td>Tehran</td>
<td>Kalaye Electric Company</td>
<td>Impianto pilota per l’arricchimento dell’uranio - smantellato</td>
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<td>Bushehr</td>
<td>Bushehr Nuclear Power Plant (BNPP)</td>
<td>In costruzione</td>
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<td>Isfahan Nuclear</td>
<td>Miniaturized Neutron Source Reactor (MNSR)</td>
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<td>Technology Center</td>
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<td>(INTC)</td>
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<td>Fuel Enrichment Plant (FEP)</td>
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<td>Radioactive Waste Storage (RWS)</td>
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<td>Pilot Uranium Laser Enrichment Plant (PULEP)</td>
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<td>Iran Nuclear Research Reactor (IR-40), 40MW</td>
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<td>Waste Storage site</td>
<td>In fase di trasferimento al JHL del TNRC di Tehran</td>
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<td>Gchine &amp; Saghand</td>
<td>Uranium mines and mills</td>
<td>In costruzione</td>
</tr>
</tbody>
</table>
Immagini dei principali impianti nucleari iraniani (Fonte: BBC)

Dopo anni di intensa attività, con ispezioni multiple ai siti, colloqui e raccolta di campioni, l’AIEA e riuscita a dimostrare che non c’è diversione di materiali nucleari dichiarati nei siti sotto osservazione". L’Agenzia non può però ancora confermare che lo scopo del

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10 Ovviamente, è necessario tenere in considerazione che l’Agenzia non possa sbilanciarsi sull’esistenza di siti clandestini.
programma nucleare iraniano sia interamente pacifico. Vale la pena riportare le conclusioni del rapporto al Board dei Governatori presentato il 14 novembre 2006, come richiesto dalla Risoluzione 1696 (31 luglio 2006) del Consiglio di Sicurezza dell’ONU:

“While the Agency is able to verify the non-diversion of declared nuclear material in Iran, the Agency will remain unable to make further progress in its efforts to verify the absence of undeclared nuclear materials and activities in Iran unless Iran addresses the long outstanding verification issues, including through the implementation of the Additional Protocol, and provides the necessary transparency. Progress in this regard is a prerequisite for the Agency to be able to confirm the peaceful nature of Iran’s nuclear program” [nostra sottolineatura]. In questa frase vi è tutto il senso dei limiti dell’AIEA se lo Stato in esame non è pienamente collaborante e trasparente nelle sue dichiarazioni. Come è ben noto, gli Stati membri del TNP che sono NNWS, come lo è l’Iran, sono obbligati dall’Articolo III del Trattato a firmare un Accordo delle Salvaguardie basato sull’INFCIRC/153 (Corr.), che permette all’Agenzia di ricevere e verificare per proprio conto la consistenza delle dichiarazioni fatte dai NNWS ed, eventualmente, fare “special missions”. Se lo Stato in esame firma e ratifica di sua volontà un accordo rafforzato, noto come l’Additional Protocol delle Salvaguardie (basato sul documento dell’AIEA INFCIRC/540 [Corr.])11, allora l’Agenzia può verificare la completezza di tutte le dichiarazioni relative a tutti i siti del programma nucleare dello Stato in esame, aiutandosi anche con ispezioni in “short term” più intrusive, con l’imposizione di sistemi digitali di monitoraggio, con colloqui con operatori ed esperti e con la raccolta di campioni ambientali dai siti nucleari ispezionati.

Senza la possibilità di usare l’AP e la completa collaborazione dello Stato, l’Agenzia di fatto non è in grado di verificare la natura pacifica di un programma nucleare. Purtroppo, nel caso dell’Iran, vi sono a tutt’oggi questioni cruciali che richiedono una risposta, se si vuole escludere la possibilità di un programma nucleare con “dimensioni militari”.

Gli outstanding verification issues sono importanti per dare un’idea della complessità e varietà del programma nucleare ma potrebbero anche avere una spiegazione pacifica civile,

11 L’Iran ha firmato l’AP con l’AIEA il 18 dicembre 2003 mettendolo subito volontariamente in opera come una Confidence Building Measure (CBM) per il negoziato nucleare con i 3UE/UE recedendo poi da questa CBM il 7 febbraio 2006, come risposta alla Risoluzione del Board dei Governatori dell’AIEA del 4 febbraio 2006 che decise di inviare il file iraniano al Consiglio di Sicurezza. A tutt’oggi, l’Iran non ha ratificato l’AP.
ponendoli in relazione al forte senso di indipendenza iraniano, esistente anche sul piano della ricerca e dello sviluppo di un ciclo del combustibile nucleare autonomo e nazionale. Ciò che però preoccupa maggiormente la comunità internazionale è l’espansione dell’avanzato programma di ricerca riguardante l’arricchimento dell’uranio condotto nel suo impianto di Natanz, poiché questo potrebbe essere si legato a un programma civile imperniato sulla gestione indipendente e autonoma del ciclo del combustibile nucleare, ma anche per apprendere a livello operativo la tecnologia dell’arricchimento nella prospettiva di un HEU break-out scenario. In altre parole, una volta che l’Iran abbia raggiunto una “sufficiente” capacità di arricchimento via centrifughe (e secondo alcuni esperti che potrebbe già avvenire alla fine di questo 2008), allora potrebbe prendere la decisione di convertire parte della produzione di LEU per combustibile nucleare alla produzione di HEU, anche in un impianto posto sotto Salvaguardie dell’AIEA. Una volta fatto ciò, Tehran potrebbe anche decidere di fuoriuscire dal TNP e quindi cessare la collaborazione con l’AIEA.

**Oustanding verification issues connesse alle attività nucleari dell’Iran**

*A) Programma d’arricchimento*

- Tracce di HEU trovate nelle campioni presi al RWS di Karaj;
- Informazioni concernenti la documentazione scoperta riguardante un programma di arricchimento con centrifughe di tipo P2, denominate dall’Iran IR-2 per sottolineare la capacità tecnologica nazionale (queste sono le centrifughe sviluppate dal Pakistan con capacità di arricchimento quasi doppia rispetto alle P1 originali. Queste ultime sono infatti basate su disegni di macchine operanti negli anni ’70 nel consorzio di arricchimento europeo URENCO, disegni poi trafugati in Pakistan da Abdul Qadeer Khan; le P1 sono le centrifughe istallate nel PFEF di Natanz).

*B) Uranio metallico*

Questo paragrafo fa riferimento a un documento di 15 pagine visionato dall’AIEA in Iran, che Tehran si è per ora rifiutata di consegnare o fotocopiare. Il documento descrive essenzialmente le procedure per realizzare delle emisfere di uranio arricchito, o depleted (cioè l’isotopo dell’uranio non fissile U-238), in forma chimica di metallo. Come è noto, un prototipo elementare di bomba nucleare all’uranio potrebbe essere realizzato con due emisfere di massa sub-critica di HEU separate tra loro, che raggiungono una super-criticità una volta “sparate” l’una contro l’altra.
C) Esperimenti con il plutonio

Un altro materiale nucleare fissile, quindi bombabile, è l'isotopo del plutonio Pu-239, praticamente inesistente in natura, ma che può essere ricavato da riprocessamento chimico (detto Purex) del combustibile spento, ottenuto da un reattore nucleare, di basso “burn-up” e facile “scaricamento” delle barre di combustibile esausto, come ad esempio sarò quello ad acqua pesante di IR-40 di Arak, che potrebbe produrre circa 10Kg di plutonio all’anno.

L'Iran ha dichiarato all'Agenzia di aver condotto degli esperimenti di separazione tra il 1995 e il 1998. Sebbene le informazioni acquisite dall'AIEA parrebbero suggerire che gli esperimenti sul plutonio non siano andati oltre il livello di laboratorio, permangono ancora dei dubbi che l'Agenzia vorrebbe dirimere. Inoltre, la recente scoperta di tracce di plutonio nei campioni prelevati al RWS di Karaj hanno rafforzato i dubbi dell'Agenzia in quanto potrebbero provenire da impianti di riprocessamento non dichiarati dall'Iran.

* Come è noto, una bomba nucleare basata sull'uranio, come quella di Hiroshima, richiede che la percentuale dell'isotopo dell'uranio U-235 – che in natura esiste solo allo 0,7% - sia incrementata al 90%, ottenendo così un materiale nucleare noto come Weapons Grade High-Enriched Uranium (Wgr HEU). Un arricchimento dell’U-235 più basso dell’ordine del 3-4% produce il Low-Enriched Uranium (LEU), che serve come combustibile nucleare della maggior parte dei reattori esistenti al mondo (i cosiddetti Light Water Reactors – LWR – come quello di Bushehr). È quindi evidente come un arricchimento oltre la soglia del 4%-5% non è più giustificabile per la produzione di energia.

Per quanto concerne l'arricchimento dell'uranio, esistono varie tecnologie: quella più usata oggi è basata su centrifughe ultraveloci. Da notare che non esiste un solo modello di
centrifuga, ma molteplici (a seconda della loro capacità di separazione\textsuperscript{12}) e diverse tecnologie di assemblaggio. In ogni caso, il concetto alla base di questo tipo di arricchimento, è semplice: l’uranio di miniera\textsuperscript{13} raffinato, noto come yellowcake, viene convertito in una particolare forma gassosa – l’esafluoride di uranio (UF\textsubscript{6}) – al fine di arricchirlo, in modo da poterlo poi iniettare nelle centrifughe\textsuperscript{14}.

\textbf{IL CICLO DEL COMBUSTIBILE NUCLEARE IRANIANO}

Le molecole dell’UF\textsubscript{6} che contengono gli atomi dell’U-235, essendo più leggere degli atomi U-238, sono spinte dalle elevatissime forze centrifughe verso il centro delle centrifughe, mentre quelle più pesanti, contenenti gli atomi di U-238, sono portate verso le loro pareti. A questo

\textsuperscript{12} Misurata in Separative Working Unit (SWU). Più alto è il SWU, maggiore è la quantità di U\textsubscript{235} separato con un certo grado di arricchimento

\textsuperscript{13} L’uranio naturale contiene circa lo 0,7% dell’isotopo di uranio fissile U\textsubscript{235}, che è bombabile, mentre il rimanente 99,7%è l’isotopo U\textsubscript{238} (o depleted uranium) che non è fissile.

\textsuperscript{14} Le centrifughe consistono sostanzialmente in cilindri molto alti di piccolo diametro che ruotano a velocità prossime, o superiori, a quella del suono.
punto, tramite appositi accorgimenti tecnici, il gas arricchito di U-235 viene fatto fuoriuscire dal centro delle centrifughe divenendo *enriched steam* (il prodotto finale dell’arricchimento), mentre quello contenente l’U-238, posto sulle pareti delle centrifughe, viene fatto uscire dai macchinari, formando così il *depleted steam* (lo “scarto”). In un impianto di arricchimento, gli *enriched e depleted steams* passano attraverso varie centrifughe interconnesse tra loro che vanno a formare le cosiddette “cascate”. All’interno delle cascate, le centrifughe sono organizzate in due tipi di gruppo (ognuno dei quali riceve lo stesso tipo di materiali e produce lo stesso prodotto e scarto):

- gruppi che servono ad arricchire la percentuale di U 235 alla soglia voluta (quando si dice, ad esempio, “arricchito alla soglia del 5%”, si intende che l’UF₆ contiene il 5% di U-235);

- gruppi che servono a impoverire gli scarti al livello desiderato (dire, ad esempio, che lo scarto, detto *tail*, deve essere dello 0,2%, significa che l’UF₆ di scarto deve contenere lo 0,2% di U 235 invece dello 0,7% esistente in natura).

In un “impianto industriale” vi possono essere diverse cascate connesse tra loro per accrescere l’arricchimento finale necessario per il combustibile nucleare (che deve essere formato dal LEU con un arricchimento pari al 3-4%) oppure per scopi militari (che richiedono invece HEU, cioè uranio arricchito oltre il 20% o oltre il 90% nel caso di *Weapons-grade Uranium* [Wgr HEU]).

Il programma iraniano di arricchimento dell’uranio inizia nel 1985. Nel 1987 Tehran acquista blueprints e componenti di centrifughe P1 dal network di Abdul Qadeer Khan, leader a livello mondiale del traffico illecito di tecnologie nucleari “sensibili” connesse al ciclo del combustibile nucleare (disegni, parti meccaniche e prototipi di centrifughe di tipo P1, ma anche del modello più avanzato P2, etc.) e nel 1990 ottiene, sempre attraverso questo network, componenti per 500 macchine P1¹⁵. Prima di discutere la *HEU break-out option*¹⁶, vogliamo discutere di

¹⁵ Secondo l’AIEA, l’Iran ha componenti per assemblare circa 3000 centrifughe di tipo P1, e una capacità tecnica di costruirne circa 700-1000 all’anno. Secondo il governo iraniano, Tehran potrebbe assemblare e provare 6 cascate di 164 centrifughe nel PFEP di Natanz entro i primi mesi del 2007. Alla fine del 2006, Tehran aveva assemblato e provato 2 cascate, oltre ad aver avviato la costruzione del primo modulo di 3000 centrifughe nel
alcuni aspetti più inquietanti della relazione tra l’Iran e il “Wal-Mart” nucleare clandestino di Abdul Qadeer Khan. Secondo documenti in possesso dell’AIEA, questo network avrebbe offerto nel 1987 all’Organizzazione Iraniana per l’Energia Atomica (OIEA) l’attrezzatura per convertire il gas UF₆ in metallo e per fonderlo – entrambe, queste, procedure essenziali per ottenere bombe nucleari. L’Iran nega però di aver autorizzato l’OIEA ad acquistare queste apparecchiature.

Un altro aspetto inquietante legato agli obiettivi di non proliferazione è stato, come già ricordato, l’offerta, formulata negli anni ’90 sempre dal network di A. Q. Khan, di fornire assistenza per lo sviluppo di un programma di arricchimento più efficiente, basato sulle centrifughe di tipo P2, con una capacità sostanzialmente doppia rispetto al modello P1. Secondo l’AIEA, l’OIEA avrebbe acquistato nel 1995 design informations (oppure l’intero pacchetto di blueprints?) , sempre da Khan e soci, a supporto di un programma già esistente operante in tale direzione, ma di non averlo effettivamente avviato dopo il 2002, al fine di non distogliere know-how e capacità dal programma di arricchimento basato sulle P1, che aveva, e ha tutt’ora, la massima priorità.

Prima di analizzare gli eventuali aspetti di non proliferazione in relazione a una dimensione non pacifica del programma nucleare iraniano, vogliamo cercare di rispondere a tre quesiti fondamentali:

1) il vasto programma di arricchimento appena descritto ha, o potrebbe avere, risultati militari?
2) Tale programma, avviato da almeno 20 anni, non ha sperimentato l’accelerazione che ci si aspettava dal punto di vista tecnico. Quali sono i motivi e cosa questo comporta?
3) Quanto è “pesato” il ruolo del network di A. Q. Khan e quali conseguenze ci saranno sul programma iraniano visto che questa organizzazione è stata sostanzialmente distrutta dall’operato della comunità internazionale? Supponendo che non esistano più altri “Wal-Mart” nucleari, Tehran sarà in grado di continuare da sola il programma avviato?

FEP di Natanz. Ricordiamo che il FEP ha una capacità massima di 52.000 centrifughe assemblate in moduli di 3000 cadauno.

16 Si veda box relativo.
Per quanto concerne la prima domanda, a nostro avviso, la risposta non è scontata: l’Iran è un Paese posto sotto sanzioni economiche e considerato dagli Stati Uniti, dopo la rivoluzione Komeinista, uno stato paria.

Quindi, per questo Paese era assolutamente impossibile portare avanti un vasto programma nucleare civile alla luce del sole, come in fondo aveva iniziato a fare sotto il regime dello Shah. In assenza di una *smoking gun* che indichi una dimensione militare, un tale programma nucleare potrebbe essere assolutamente giustificabile nell’ottica di un Paese che voglia perseguire un ciclo del combustibile nucleare autonomo e non soggetto a precondizioni politiche da parte della comunità internazionale.

La risposta alla seconda domanda potrebbe essere duplice: i) il programma d’arricchimento non è proceduto velocemente per una precisa volontà politica dell’Iran di non arrivare a uno scontro con la comunità internazionale prima di aver sviluppato una piena capacità operativa; ii) tale programma ha incontrato – e potrebbe ancora incontrare – varie difficoltà tecniche, sia a livello di costruzione delle centrifughe P1, sia a livello del loro assemblaggio in cascate (di 164 unità) e loro interconnessione.

Noi riteniamo che la risposta più probabile sia la seconda, almeno per un Paese, come l’Iran, che deve procedere clandestinamente oltre al fatto che le centrifughe P1 sono particolarmente “delicate” e soggette a varie rotture (stimate ad esempio nell’ordine del 30% nel caso in cui vengano “spente” e successivamente “riattivate”). Infine, l’assemblaggio di varie centinaia – o migliaia – di centrifughe è un processo noto dal punto di vista teorico ma estremamente difficile nella sua realizzazione pratica. Tuttavia, nel corso del 2007-2008 sembra che l’Iran sia riuscito a superare gran parte delle difficoltà tecniche legate all’installazione tanto delle centrifughe P1 che delle nuove IR2/P2, sebbene permangano dubbi sulla loro operatività.

Il terzo punto è il più difficile a cui dare una risposta. Si sa che tutti i Paesi nucleari diventati tali durante la Guerra Fredda hanno avuto l’assistenza degli Stati Uniti, dell’Unione Sovietica o della Cina, a seconda della loro appartenenza a un blocco geopolitico o all’altro. Questo è stato vero anche per i NWS fuori dal TNP, come India o Pakistan. E lo stesso vale per l’Iran, che non avrebbe infatti potuto sviluppare il suo programma del ciclo combustibile nucleare senza l’aiuto offerto dal network di Khan. Oggi, però, Tehran è in grado di procedere da sola.
in tale settore; ciò non vuol dire che abbia le capacità scientifiche e tecnologiche per "weaponizzare" l’eventuale HEU ottenuto in maniera illecita, ovvero la capacità di costruire dei veri ordigni nucleari con tale materiale e l’abilità di “miniaturizzarli” e renderli sufficientemente “leggeri” per porli nelle testate dei loro missili. Inoltre, tali ordigni, servendo a una eventuale dottrina della deterrenza nucleare, devono essere: i) sicuri, ii) affidabili, iii) “distruttivi”, cioè la loro potenza deve poter essere tra una decina e un centinaio di chilotoni\(^{18}\).

Inoltre, come sanno tutti i NWS del TNP, avere un deterrente nucleare richiede di sviluppare una “Catena di Comando, Controllo e Informazione” dedicata all’arsenale nucleare e parallela a quella militare convenzionale. Una tale struttura costa diverse decine/centinaia di miliardi di dollari all’anno (a seconda delle dimensioni del deterrente nucleare) e deve avere anche la possibilità di integrare la parte militare del complesso nucleare con quella missilistica e, ovviamente, con quella strategica del Paese. È possibile pensare che l’Iran non abbia preso in considerazione questa realtà nell’ipotesi che abbia già scelto di diventare un NWS? Può l’Iran, Paese con molte disfunzioni economiche, alta corruzione e un settore degli idrocarburi che, nei prossimi vent’anni, necessiterà di grandi investimenti in ammodernamento, permettersi questa scelta strategica, tenendo anche conto che questa opzione lo porterebbe anche a un maggior isolamento economico e politico?

Per attuare la diversione di HEU, cioè il cosiddetto \textit{HEU break-out option}, vi sono in linea di principio due vie:

1) sotto l’ombrello del TNP, tramite la sconnessione di alcuni \textit{pipes} che connettono le varie cascate alla base di uno – o più – moduli di arricchimento dell’impianto pilota PFEP o dell’impianto industriale di Natanz, che stanno arricchendo uranio naturale a LEU al 5% sotto le Salvaguardie tradizionali del TNP (cioè le Full-scope Safaguards INFCIRC/153 [Corr.], che non permettono né il prelevamento di campioni, né visite intrusive o altre particolari misure), e la loro successiva

\(^{17}\) Secondo le stime dell’intelligence americana, l’Iran potrebbe sviluppare il suo primo ordigno nucleare tra dieci anni. Ovviamente, come vedremo nel Box sulle capacità d’arricchimento, l’Iran può raggiungere il punto di svolta nell’arricchimento dell’uranio già nel 2007 e iniziare eventualmente a produrre una quantità “sufficiente” di HEU nel 2008-2009.

\(^{18}\) Un chilotone è l’unità di misura della potenza distruttiva di un ordigno nucleare, pari all’energia rilasciata dall’esplosione di 1000 tonnellate di esplosivo al TNT.
riconnessione ad altre cascate dello stesso impianto che saranno così alimentate da LEU al 5% e potranno quindi essere dedicate a produrre, clandestinamente, HEU\(^{19}\) sotto le Salvaguardie del TNP;

ii) impugnando l’Articolo X del TNP, che permette a un TNP-NNWS di denunciare il Trattato invocando cause estreme riguardanti la sicurezza nazionale, dopo aver appreso la tecnica di arricchimento dell’uranio nell’impianto pilota e averla quindi ripetuta in altri impianti nascosti all’AIEA.

Ovviamente, questi due scenari non sono mutuamente esclusivi e l’Iran potrebbe, ad esempio, seguire inizialmente la prima via per poi abbandonare il TNP e procedere secondo uno scenario misto (i)-(ii).

19 La produzione di HEU, non permessa in un impianto d’arricchimento civile sotto Salvaguardie senza l’Additional Protocol, è difficile da scoprire. Ad esempio, se un impianto è dotato di 50.000 centrifughe e se si usa, per la produzione di HEU, un gruppo costituito da non più di 1.000 centrifughe, le discrepanze risultanti tra l’ammontare di LEU dichiarato dal NNWS responsabile di tale impianto e quello misurato dagli ispettori dell’AIEA sarebbero minime e giustificabili in vari modi, inclusi gli inevitabili errori statistici (la stessa Agenzia permette, sotto le INF/CIRC/153, discrepanze di questa natura nell’ordine del 2%). In un tale scenario, con 1.000 centrifughe P1 dedicate a produrre clandestinamente HEU, l’Iran potrebbe ricavare almeno 50Kg di Wgr HEU (pari a due testate nucleari) in un periodo di tempo compreso tra 7 e 9 mesi (si veda box relativo). Una volta accertato che non vi siano problemi tecnici e operativi, il Paese potrebbe anche decidere di fuoriuscire dal TNP. Se la comunità internazionale, attraverso il Consiglio di Sicurezza dell’ONU, non avrà nel frattempo legiferato in modo da non permettere a un TNP-NNWS non particolarmente ottemperante ai suoi obblighi di impugnare l’Articolo X, l’Iran o altri Paesi che decideranno di proliferare in questo modo non saranno perseguibili secondo il diritto internazionale.
Capacità teorica (in Kg/anno) di produzione di Wgr HEU e tempi necessari stimati (giorni o anni) per produrre 25Kg di Wgr HEU a seconda di diversi scenari d’arricchimento

Vengono qui presi in esame due tabelle che presentano delle stime, ipotizzando un Wgr HEU arricchito al 93% di U-235 e l’uso di centrifughe di tipo P1, come quelle del PFEP di Natanz, che hanno una SWU pari a 2-3Kg per anno. Per “scarto”, come si è già descritto, si intende l’arricchimento in U-235 inferiore alla soglia naturale (0,7%) dell’UF₆ gettato dal processo di arricchimento a soglie di HEU con centrifughe.

<table>
<thead>
<tr>
<th>Produzione di Wgr HEU annuale in Kg/anno</th>
<th>Iniezione di UF₆ d’uranio naturale</th>
<th>Iniezione di UF₆ di LEU al 5% di U-235</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scen. “basso” scarto (0.2%)</td>
<td>Scen. “alto” scarto (0.4%)</td>
</tr>
<tr>
<td>164 centrifughe P1 in una cascata (impianto di ricerca)</td>
<td>1,5</td>
<td>10</td>
</tr>
<tr>
<td>1.000 centrifughe P1 in 6 cascate interconnesse (impianto pilota)</td>
<td>10</td>
<td>65</td>
</tr>
<tr>
<td>3.000 centrifughe P1 in 18 cascate interconnesse (impianto pilota o un modulo di un impianto industriale)</td>
<td>30</td>
<td>190</td>
</tr>
<tr>
<td>51.000 centrifughe (17 moduli interconnessi di un impianto industriale)</td>
<td>460</td>
<td>3.170</td>
</tr>
</tbody>
</table>

Si noti che la stima teorica per la massa critica di Wgr HEU per un ordigno nucleare “elementare” è di circa 20-25Kg, che può essere ulteriormente ridotta a circa 15Kg nel caso si usino disegni di arma particolarmente sofisticati e speciali accorgimenti tecnici.

<table>
<thead>
<tr>
<th>Tempo stimato di “spinning” delle centrifughe P1 per produrre 25Kg di Wgr HEU (pari a una bomba)</th>
<th>Iniezione di UF₆ d’uranio naturale</th>
<th>Iniezione di UF₆ di LEU al 5% di U-235</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scen. “basso” scarto (0.2%)</td>
<td>Scen. “alto” scarto (0.4%)</td>
</tr>
<tr>
<td>164 centrifughe (1 cascata)</td>
<td>17 anni</td>
<td>2,5 anni</td>
</tr>
<tr>
<td>1.000 centrifughe (6 cascate)</td>
<td>2,5 anni</td>
<td>140 giorni</td>
</tr>
<tr>
<td>3.000 centrifughe (18 cascate/1 modulo)</td>
<td>330 giorni</td>
<td>50 giorni</td>
</tr>
<tr>
<td>51.000 centrifughe (17 moduli)</td>
<td>20 giorni</td>
<td>3 giorni</td>
</tr>
</tbody>
</table>

Da notarsi che se l’Iran usasse centrifughe di tipo P2, che hanno un rendimento circa 2 volte maggiore delle P1, allora il Wgr HEU prodotto annualmente raddoppierebbe e i tempi di “spinning” per produrre 25Kg di Wgr HEU si dimezzerebbero.
Il programma missilistico iraniano

Vi sono molti “miti” sui programmi missilistici di uno Stato proliferante o che si supponga tale. Cercheremo in questo Box di chiarirne alcuni e di analizzarli poi alla luce del “caso Iran”.

1) Armi nucleari e missili balistici
Le armi nucleari strategiche non hanno bisogno di missili particolarmente precisi in quanto queste sono armi di grande yield, cioè di decine o centinaia di chilotoni. Inoltre, nella teoria classica della deterrenza nucleare, le forze nucleari strategiche devono avere almeno:

I. alta sopravvivenza (e ciò implica missili lanciati da sottomarini o, al limite, nel caso terrestre, da rampe mobili);
II. alta spinta iniziale nella cosiddetta boost-phase;
III. tempi di lancio brevi, cioè in un ordine compreso tra la decina di minuti e qualche ora (questo esclude missili a propellente liquido);
IV. payload non inferiori a 700-1.000Kg

Per quanto concerne il range, assumendo un uso non sub-strategico (tattico), i missili nucleari possono essere di medio range (Medium-Range Ballistic Missiles, MRBM), cioè compreso tra i 1.000 e i 2.000 chilometri, oppure lungo (Long-Range Ballistic Missiles, LRBM), cioè superiore ai 2.000Km. Ad esempio, le forze nucleari strategiche terrestri indiane o pakistane sono basate su MRBM.

2) Capacità missilistica iraniana
Possiamo a grandi linee affermare che la capacità missilistica iraniana è molto più avanzata di quella nucleare, ed è in continuo progresso. La ragione di ciò, è dovuta essenzialmente al fatto che i missili balistici iraniani sono stati sviluppati su quelli nord-coreani, grazie a una sostenuta e continua collaborazione clandestina tra i due Paesi. Inoltre, la tecnologia
missilistica iraniana si sarebbe servita, secondo la CIA, dell’assistenza di imprese cinesi (soprattutto per quanto concerne i “sistemi di guida”) fino al 2003. Un'altra caratteristica dei missili balistici a corto-medio raggio iraniani è che essi sono a propellente liquido e non sono molto precisi, il che li rende poco adatti a scenari di guerra convenzionale. Questo, tuttavia, non implica assolutamente che questi missili balistici siano stati concepiti per una guerra nucleare ma, piuttosto, che la tecnologia di guida non sia ancora sufficientemente sviluppata.

3) I missili iraniani Shahab

I dati balistici di questi missili sono riportati nella seguente tabella.

<table>
<thead>
<tr>
<th>Tipo</th>
<th>Stato</th>
<th>Missile progenitore</th>
<th>Propellente</th>
<th>Range (Km)</th>
<th>Payload (Kg)</th>
<th>Inventario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shahab-1</td>
<td>Operativo</td>
<td>Nord Corea SCUD B</td>
<td>Liquido</td>
<td>300 (SRBM)</td>
<td>~ 1.000</td>
<td>250-300</td>
</tr>
<tr>
<td>Shahab-2</td>
<td>Operativo</td>
<td>Nord Corea SCUD D</td>
<td>Liquido</td>
<td>500 (MRBM)</td>
<td>750-1.000</td>
<td>200-450</td>
</tr>
<tr>
<td>Shahab-3</td>
<td>Operativo</td>
<td>Nord Corea Nodong-1</td>
<td>Liquido</td>
<td>1.300-2000 (MRBM)</td>
<td>750-1.500</td>
<td>25-100</td>
</tr>
<tr>
<td>Shahab-4</td>
<td>Sviluppo</td>
<td>Nord Corea Taepodong-1</td>
<td>Liquido</td>
<td>3.000 (LRBM)</td>
<td>1.000-1.500</td>
<td>0</td>
</tr>
</tbody>
</table>

Particolarmente interessante per una visione nucleare sarebbe il medium-range (MRBM) Shahab-3, se fosse dotato di motore a propellente solido e di payload intorno ai 1000Kg. Con un range di 1.500Km potrebbe infatti colpire ogni parte di Israele. Tuttavia, nel caso l’Iran diventi un NWS, la schiacciante superiorità delle forze nucleari israeliane renderebbe di fatto inapplicabile la dottrina della deterrenza nucleare classica nella regione; questo potrebbe spingere Tehran a minacciare di rappresaglia nucleare non tanto Israele quanto i Paesi arabi del Golfo Persico. In questo caso, il candidato più ovvio per una visione nucleare è lo Shahab-2, missile molto versatile a corto raggio (SRBM), intorno ai 500Km, con una payload che può tranquillamente essere estesa a 1.000Kg. Se tale ipotesi geostrategica fosse “ragionevolmente veritiera”, bisognerebbe forse prestare maggiore attenzione agli sviluppi tecnologici che l’Iran sta ottenendo nel campo dei SRBM e nelle versioni con motori a propellente solido a elevata “spinta”.

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3.1 India’s Minimum Deterrence Thinking and Practice

3.1.1 The Concept of Minimum Deterrence

What is minimum deterrence? The term has been applied to the nuclear postures adopted by the United Kingdom, France, and China. Its central meaning is that relatively small arsenals can deter much bigger ones by imposing unacceptable potential costs on the latter. The question “How much is enough?” is open to a wide range of answers. For instance, an estimate by the US Navy during the Cold War as to the quantum of warheads required to establish minimum deterrence places that requirement as high as 720, with the objective being the destruction of “all of Russia.” What exactly is meant by “minimum deterrence” has a profound effect on the entire posture that a nuclear-armed state chooses to adopt. In the Indian case, it is evident that there has been a minimalist understanding of what a minimum deterrent comprises.

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Following the series of nuclear tests carried out by India in 1998, Prime Minister Atal Behari Vajpayee declared in Parliament that his government had adopted a policy of “minimum credible deterrence.”22 His statement, followed by further statements in May and December 1998, emphasized that India would follow a policy of no first use (NFU) of nuclear weapons, that further tests were not necessary, that India would adhere to export control norms on nuclear technology, and that his government was keen on arms control.23 Further, the Indian government chose not to deploy its nuclear arsenal despite successive crises in the aftermath of the 1998 tests, notably the Kargil conflict of 1999, which involved considerable fighting between Indian and Pakistani forces.

In August 1999, India produced a Draft Nuclear Doctrine that reiterated these aspects of India’s posture, and added some more.24 The document called for a triad of nuclear forces, and emphasized “survivability” based on a “combination of multiple redundant systems, mobility, dispersion and deception,” operational sophistication, and on credibility – “any adversary must know that India can and will retaliate.” A short press release in January 2003 stated that India would take recourse to “massive” retaliation and that the option could be exercised in response to chemical and biological attacks as well.25 It also asserted that India reserved the right to a nuclear response to such attacks on its forces “anywhere,” implying that Indian forces might be engaged in combat outside Indian territory.

Several aspects of doctrine have not been spelt out in official documents, but have been explicitly stated in an interview given by then Minister for External Affairs Jaswant Singh in November 1999.26 These include the view that “parity is not essential for deterrence,” which is an important acknowledgement that so-called nuclear “balances” are irrelevant. This has an important implication for strategic stability in that it constrains arms racing by ruling out anxieties regarding potential windows of vulnerability and makes arms control less problematic. A second aspect is that “retaliation need not be instantaneous,” which means

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nuclear weapons need not be kept in a ready-to-use posture, but can instead be maintained in non-deployed status. This is highly conducive to stability because it reduces the possibility of loss of control over weapons by way of accident, deliberate unauthorised launch, or launch resulting from an action-reaction process of mutual misperception. Singh also explicitly rejects tactical weapons and asserts that “we do not see nuclear weapons as weapons of war fighting.”

It is evident that in several important respects, the Indian view of nuclear weapons is defensive and minimalist. The adoption of a non-deployed, NFU-based posture which denies the value of nuclear warfighting; the admission that nuclear balances do not matter; and the commitment to refrain from further testing clearly show that deterrence is viewed in truly minimal terms. However, there are a number of significant inconsistencies in Indian thinking. First, the stress on “credibility” is particularly problematic. Does credibility really matter? There is sufficient evidence to show that it does not. Regardless of the actual doctrines to which states claim to adhere, the reality is that when nuclear rivals confront each other, what really deters both is the risk of high-level damage. A nation is deterred not by the certainty of its adversary’s retaliation, but by the possibility of immense damage. As Kenneth Waltz argues, “contemplating war when the use of nuclear weapons is possible focuses one’s attention not on the probability of victory but on the possibility of annihilation,” with the result that “the problem of the credibility of deterrence, a big worry in a conventional world, disappears in a nuclear one.”

Thus, despite possessing “inferior” nuclear firepower, the Soviet Union could still deter the United States during the Cuban Missile Crisis in 1962, and China could similarly deter the Soviet Union during their armed clashes in 1969. The key point is that in a nuclear confrontation, even a small risk of damage is unacceptable.

It follows that concepts such as credibility, vulnerability, and survivability – all of which are given much importance by mainstream strategic experts – are not of much positive value. On the contrary, they have negative value because they compel us to ask whether we have enough weapons, whether we need more and better ones, and whether we need to convey will more strongly. Thus, even a minimalist like Jaswant Singh insists on the centrality of

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credibility and survivability, as do almost all Indian (and indeed non-Indian) strategic analysts. Singh qualifies his minimalism by hedging, asserting that the notion of minimum “cannot be a fixed physical quantification; it is a dynamic concept but firmly rooted in the strategic environment, technological imperatives and national security needs and the actual size, components, deployment and employment of nuclear forces will be decided taking into account all these factors.” Once this is admitted, the door to indeterminate expansion is opened, and, conceivably, the idea of a minimum deterrent could begin to drift toward something like that of the US Navy cited above. Similarly, Singh argues that while it is “premature” to talk of a triad, “R&D programmes will certainly continue, aimed at enhancing survivability and thus, credibility....”

The effect of such ambiguity in the basic concept of minimum deterrence is that doctrine and posture become hostage to changing perceptions that may push the answer to the question “How much is enough?” in the direction of unnecessary expansion (contravening the rule that balances do not matter). Lack of a clear conceptual grounding may also lead to active deployment, perhaps on alert status, for the sake of credibility, thereby increasing tensions with nuclear adversaries. The result would be loss of both crisis stability and arms race stability. Against this, it is a historical reality that India has always been a reluctant nuclearizer, which means it does not have a built-in tendency to go much beyond the well-embedded nuclear minimalism of its decision makers.

3.1.2 India’s Strategic Evolution: Embedded Nuclear Minimalism

The Indian approach to nuclear weapons has from the beginning been a mix of idealism and realism. After Independence in 1947, Prime Minister Jawaharlal Nehru repeatedly expressed his abhorrence of nuclear weapons and their potential to do horrific damage, and yet refused to close the nuclear option. It must be noted that for most of Nehru’s seventeen years as prime minister (1947-64), India did not face any significant military threat. It was only toward the end of this period (1962) that India was involved in a war with China. Nehru died not long after that event, and it was his successor, Lal Bahadur Shastri, who had to decide how to respond to China’s first nuclear test (1964). The suddenly enhanced threat from China
impelled Shastri to sanction a limited nuclear weapons-related research program, the Subterranean Nuclear Explosion Project (SNEP), though only to a point well short of an actual test. At this time, it may be recalled, India did not have to worry about the political fallout of a test since the nonproliferation regime was still in its infancy (the Nuclear Nonproliferation Treaty or NPT came up for signature only in 1968). Nehru’s daughter, Indira Gandhi, who succeeded Shastri in 1965, did eventually approve a test, which was carried out in 1974, but the remarkable aspect of her policy is that she made no effort to operationalize India’s nuclear capability, and instead resisted the efforts of her advisors to push the weapons program further.

The bomb was finally built in about 1990, when Mrs. Gandhi’s son, Rajiv Gandhi, was prime minister. At this juncture, India seemed isolated as the Soviet Union, soon to collapse, was shifting away from its quasi-alliance with it. India’s relationship with the United States was uneasy, while the twin threat from China and Pakistan, aggravated by their nuclear-missile nexus, loomed large. But India’s bomb remained in the basement and there was still no effort to develop an organizational structure for it. It was only under Vajpayee and his Bharatiya Janata Party (BJP)-led coalition that India finally became a declared nuclear power in 1998. As already noted, India’s nuclear posture remained one of non-deployed forces, a stance which has been retained by his Congress Party successor, Manmohan Singh, who became Prime Minister following the elections of 2004. Operationalization has been slow. An integrated tri-service Strategic Forces Command (SFC) took five years to create, and has developed a structure at snail’s pace. At the time of writing (early March 2006), the appointment of a Chief of Defence Staff is still awaited.

All of this indicates hesitant nuclearization. An overview of the whole process brings out some significant general characteristics. First, nuclear weapons have never been considered central to India’s national security under parties and leaderships of varying political backgrounds. Even in circumstances of emerging nuclear threats from China and Pakistan, there has been little effort to nuclearize the defence forces rapidly and to adopt a well-grounded operational posture. Second, major principles of minimum deterrence have been retained. Weapons are not deployed, there is no anxiety with respect to China’s far greater capabilities, and calls for additional testing have not found significant support from within the government or outside it. Third, there is scarcely any interest in developing warfighting capability despite some criticism that a massive retaliation threat is unlikely to be credible in the event of low-level nuclear
threats. And fourth, India has retained its interest in arms control and has engaged with Pakistan in persistent efforts to obtain nuclear-strategic stability (which will be discussed at length in Part II). Thus, in spite of the inconsistencies noted earlier in the Indian understanding of the concept of minimum deterrence, it seems unlikely that there will be a significant drift away from the moorings of nuclear minimalism.

The prospects for stabilization remain good. Yet it would be overoptimistic to argue that there will be no problems ahead. So long as there is conceptual fuzziness about the basic principles of minimum deterrence, India’s posture could come under pressure if its relationships with its adversaries were to deteriorate sharply. The attack on India’s Parliament by terrorists in December 2001 quickly brewed a serious crisis between India and Pakistan. A similar crisis could break out once again in the event of a like event occurring. Worse, if the event were to be very destructive, India-Pakistan tensions could rise rapidly, and a nuclear confrontation could ensue, bringing with it new pressures that could undo India’s nuclear minimalism and push it toward a more unstable posture.
3.1.3 Current Posture

India’s nuclear capabilities may be delineated as follows.  

**Warheads:** Estimates of the number of warheads India has in its possession at present and will have in coming years vary considerably. One source places the current number at about 40-50 in 2005 and at 300-400 around 2010. According to another estimate, by 2010-20 India will have enough plutonium for 150-200 warheads (excluding sub-kiloton warheads). Though virtually no information is available publicly, the warheads could be of varying yields. The 1998 tests ranged from sub-kiloton devices to small thermonuclear or possibly boosted fission device (there has been some debate over this). The Indo-US nuclear agreement of July 2005, which requires India to separate its civilian and military nuclear facilities, has been opposed by critics because it places limits on future numbers (India will lack the capacity to expand its plutonium production much further if most of its civilian reactors are placed under safeguards.) But from a minimalist standpoint, this may not be a problem since India already has enough capacity to provide a minimum deterrent force. Neither the numbers nor the yields matter very much. If one bases the requirements of minimum deterrence on the basic principles outlined above, it only requires a handful of warheads to pose the risk of unacceptable damage against a potential aggressor.

**Delivery Vehicles:** India possesses a number of aircraft capable of delivering nuclear weapons. The Mirage 2000 and the Jaguar have long ranges and relatively heavy payload capacity. The Mig-27, the Mig-29 and the Su-30 have the capacity to attack Pakistani targets. The Indian Navy’s reconnaissance aircraft, the Tu-22M and the Tu-142, can also be modified for delivery of nuclear weapons. India also has several types of missiles for the delivery of nuclear warheads. The short-range Prithvi has a range of 150-300 km and has been developed for delivery from land, sea and air. It is reported that the army and the air force are

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30 Ibid.


not keen on the Prithvi variants designed for them (I and II respectively) as they are liquid-fuelled and inefficient.\textsuperscript{33} The Prithvi-III, being developed in both solid-fuel and liquid-fuel versions, has been welcomed by the Indian Navy.\textsuperscript{34} The Agni-I and Agni-II are land-based solid-fuel missiles with ranges of 700 km and 2000-2500 km respectively. Both have mobile basing, road as well as rail. The Agni-III, designed for a range of up to 3,500 km, has faced technical difficulties, and is now being developed by extending the Agni-II in stages.\textsuperscript{35} As is evident, India aims to build a nuclear triad. The development of sea-based capability has been slow. A submarine-launched version of the Prithvi-III, known as Sagarika, was successfully tested in 2005.\textsuperscript{36} India has also been developing a nuclear submarine, known as the Advanced Technology Vessel (ATV) to which end the first (land-based) reactor became fully operational by December 2004.\textsuperscript{37} In November 2005, Defence Minister Pranab Mukherjee announced that Russia had agreed to collaborate on some aspects of its production.\textsuperscript{38} The search for a triad is questionable. The standard argument for it, particularly for the development of a submarine-based nuclear capability, is that it is the least “vulnerable” of weapons systems. But as we have seen, the whole notion of vulnerability is in practice irrelevant to the effectiveness of an arsenal from a minimum deterrence standpoint.

It may be added that India has also developed a supersonic cruise missile – the Brahmos – with Russian collaboration which, though now designated as conventional and short-range (less than 290 km) could eventually be developed for longer ranges and for carrying nuclear warheads. There is some talk of a long-range missile capability (5,000 km +) growing out of the Agni-III, but this is not considered strategically necessary in the foreseeable future.

\textit{Deployment:} As noted above, India’s nuclear weapons posture is a restrained one. Its chief positive feature is non-deployment. Warheads are kept in an unassembled state, with cores

\begin{itemize}
\item \textsuperscript{33} Sandeep Dikshit, “Army, Air Force Not Keen on Prithvi Missile,” \textit{Hindu}, October 3, 2005
\item \textsuperscript{34} “DRDO Test-Fires Naval Version of Prithvi-III,” \textit{Indian Express}, October 28, 2004
\item \textsuperscript{35} Sandeep Dikshit, “Step-up of Agni-II Range Planned,” \textit{Hindu}, February 13, 2005
\item \textsuperscript{36} Dikshit, “Army, Air Force Not Keen on Prithvi Missile.”
\item \textsuperscript{37} T. S. Subramanian, “ATV Project: India Crosses Major Milestone,” \textit{Hindu}, November 25, 2005
\item \textsuperscript{38} Vladimir Radyuhin, “Russia to Help Build Nuclear Submarine,” \textit{Hindu}, November 17, 2005
\end{itemize}
and the remaining parts stored separately. Delivery vehicles are also kept apart. To date, there is no confirmed evidence that the three components have been brought together. The advantage of keeping weapons in disaggregated condition is that such a posture offers a high degree of built-in stability, particularly during crises of the kind that India faced with Pakistan in 1999 and 2001-02. When tensions are high, a fully deployed weapons system is extremely threatening, and also susceptible to early use in the event of misperception of the adversary’s intentions. Strategic stability may also be undermined by false alarms, nuclear accidents, or terrorist attacks on deployed weapons. But a caveat is in order. If nuclear weapons are deployed at some point in a crisis, this would constitute a sudden escalation that would also be destabilizing. Besides, if deployment were done in a hurried, time-bound manner, the risk of accidents would be higher than normal.

Conditions under Which Nuclear Weapons Might Be Used: The mode of deployment in part determines the conditions under which nuclear weapons would be used. Non-deployment means India does not contemplate early use, even in retaliation. India has always emphasized no first use (NFU), which includes non-use against non-nuclear-armed states. This is of course a political position that may not be taken at its word by adversaries, as indeed it is not by Pakistan. It is sometimes argued that NFU shapes posture, especially with regard to deployment. However, it can be pointed out that Pakistan, which does not subscribe to NFU, has also adopted a non-deployed posture. Thus, NFU does not amount to much and tends to be over-stated by Indian policy makers. It has already been qualified by the January 2003 statement that India may retaliate with nuclear weapons against chemical and biological attacks as well. There is no mention of the possibility of nuclear retaliation in the event of a serious conventional failure. In a series of interviews of Indian civilian and military strategic experts in 1999-2000, this author specifically asked respondents whether they thought a nuclear response to a major conventional defeat, such as the loss of the Kashmir valley, would be appropriate. Only a single individual (not a military officer) answered in the affirmative. Again, it must be allowed that an adversary may not take this at face value.

Nuclear weapons use arising from failure of command and control is also possible and is recognized. India’s civilian authority maintains strict centralized control over its arsenal. Non-deployment is partly attributable to this concern. A major worry about potential nuclear use

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relates to escalation from conventional conflict. This is certainly a problem of which Indian leaders are aware. Hence they have refrained from engaging Pakistan in limited conventional war even while proclaiming its viability, as they did in 2001-02. This is discussed below in the subsection on nuclear weapons and subnuclear conflict.

Targeting: In the interviews with strategic experts mentioned above, the great majority, even among military officers, favoured countervalue over counterforce targeting. Official doctrine as declared in the January 2003 press release, speaks only of massive retaliation in the event of a nuclear attack. As mentioned above, External Affairs Minister Singh explicitly rejected the notion of nuclear warfighting. The technical capability for developing small nuclear weapons usable for tactical warfare was demonstrated by the conducting of low-yield tests in 1998, but this was apparently only for demonstration purposes. The idea of a limited nuclear war simply does not find a significant number of takers in India. In practice, it must be acknowledged, if actual use is considered, it would make little sense to close the window to early war termination by resorting to immediate massive retaliation. If nuclear weapons are to be used, it may make sense to use them for demonstration purposes or in a tactical way. Minimum deterrence thinking, however, cannot hold a strategy for such an eventuality. From a minimum deterrence standpoint, targeting is immaterial. Deterrence is existential, i.e., the mere presence of even a very small number of nuclear weapons is sufficient to deter.

Command and Control: The Indian arsenal is under tight civilian control. The Nuclear Command Authority (NCA) consists of a Political Council and an Executive Council. The former, headed by the prime minister, is vested with the authority to authorize nuclear use, while the latter, which includes senior members of the armed forces, is the implementing body. It too is headed by a civilian, the National Security Advisor. Since India’s weapons platforms are distributed among the services, a coordinating body – the Strategic Forces Command – has been set up under the Chairman, Chiefs of Staff Committee. The creation of a Chief of Defence Staff, however, has been hanging fire for a long time, partly owing to inter-service rivalry and partly, it appears, owing to reluctance on the part of the political leadership to vest too much military power in a single officer. Interestingly, there has not been much concern expressed over the so-called “always/never problem” which postulates an unavoidable tension between the imperatives of command, which exercise a pull toward decentralization of launch authority to ensure reliable execution of orders, and those of
control, which tend toward centralized control to make certain that there is no unauthorized launch.\textsuperscript{40} India’s non-deployed posture clearly leans strongly toward control rather than command. In any case, the problem is notional. A quick-response command system is meaningful only if one is worried about “vulnerability” to a first strike, which is not the case here. There is certainly some hedging against attacks on the command and control system. In 2003, Defence Minister George Fernandes announced that “more than one” control centre had been established as well as special shelters for high government officials.\textsuperscript{41}

\textbf{Testing:} Apart from its single test in 1974, India has carried out five tests in May 1998. These were officially stated to be of a 12 kiloton fission device, a 43-kiloton thermonuclear device, and three sub-kiloton tests. There has been considerable controversy over the claim with regard to the thermonuclear test, and some have argued that it was a boosted fission device. Whatever the truth, from the standpoint of minimum deterrence, yield does not matter very much. Bigger bombs do not make better deterrents. More important is the immediate government commitment not to test further. Though India has rejected the Comprehensive Test Ban Treaty (CTBT), it has since 1998 adhered to a self-imposed moratorium on testing. With a few exceptions, there has been no significant demand for further testing. This again reflects a minimalist approach to deterrence since any argument for a reliable or sophisticated nuclear arsenal would necessarily bring calls for testing.

\textbf{Nuclear Weapons and Subnuclear Conflict:} Nuclear doctrine must pay close attention to the relationship between nuclear conflict and lower levels of conflict. When crises and confrontations occur, nuclear adversaries tend to follow very similar patterns. They engage in a great deal of shadow boxing and sometimes marginal armed conflict, but scrupulously avoid regular conventional war because of the risk of escalation to the nuclear level. Actual fighting between nuclear adversaries has occurred only twice: in the Sino-Soviet border clashes of 1969 and the India-Pakistan conflict in the Kargil region of Kashmir in 1999. The latter brought home to Indian policy makers the reality of the “stability/instability paradox,” under which


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rivalries between nuclear powers are played out through low-level confrontation. Thus, in South Asia, Pakistan resorted to covert incursion into Indian territory (in the Kargil conflict) and more generally to backing terrorist groups active in India. The Indian response was to assert that nuclearization did not rule out limited war. In December 2001, India sought to compel Pakistan to retract its support for “jihadis” attacking Indian targets by threatening and mobilizing for limited war, a strategy which failed to achieve that end. It is evident that the Indian understanding of the relationship between levels of war was hazy. Initially, the leadership had believed that nuclearization froze the status quo. But Pakistani strategy taught them otherwise. Now they sought to turn the stability/instability paradox against Pakistan through coercive diplomacy. But in the end, Pakistan could resist Indian pressure because it had nuclear weapons, and the risk of escalation prevented India from carrying out its limited war threat. Ironically, minimum deterrence worked against India in this case. The fact that Indian leaders have since then persisted with negotiations with Pakistan indicates that they have recognized this. The chief lesson of the 2001-02 crisis is that even a small risk of nuclear conflict renders a limited conventional war unviable.

Arms Control: India’s discomfort with the deterrence benefits of nuclear weapons is an old one. Though he acknowledged that India needed to keep the nuclear door open, Nehru was aware that “one accident, one irrational decision, or one wrong move might very well spell an end for everything living.” This explains his strong advocacy of universal disarmament, which all subsequent prime ministers have without exception endorsed. While the idealistic preference for disarmament has been tempered in recent years, interest in stabilization through the adoption of nuclear risk reduction measures has remained. The approach, discussed at length in Part II, has been political rather than technical, emphasizing political commitment rather than issues of verification. Interest in strategic stability is thus inherent in India’s strategic culture with respect to nuclear weapons and is a key component of its minimum deterrence doctrine.

3.1.4 Assessment

The discussion above shows that India’s thinking and practice on nuclear strategy are to a high degree congruent with the precepts of minimum deterrence. This is clear from India’s self-imposed moratorium on testing, its non-deployed posture, its rejection of nuclear warfighting, and its sustained interest in nuclear risk reduction. All of these are conducive to strategic stability, especially during crises. On the other hand, there are aspects of posture which are not in accord with minimum deterrence principles, notably the emphasis on credibility and vulnerability, the search for a triadic capability, and the lack of clarity on the relationship between nuclear and subnuclear conflict. These inconsistencies, with the exception of the last, are related to the question of arms race stability. The stress on credibility and vulnerability tends to encourage an open-ended process of arms acquisition, which is reflected in the quest for a triad. The Indian view on the viability of limited conventional war has not been repudiated as yet and could aggravate crises in the future if relations with India’s nuclear adversaries deteriorate. Against this, it may be said that repeated attacks by Pakistan-based terrorists since the end of the 2001-02 crisis have not led to the renewal of a limited war threat by Indian leaders.

As is evident, the Indian approach to nuclear weapons is conducive to strategic stability. This has been demonstrated by the refusal to deploy even when there has been actual fighting between Indian and Pakistani forces (1999) and when the threat of conventional war between India and Pakistan has appeared imminent (2001-02). Arms control stability, on the other hand, may be problematic in the future if the logic of “credibility” and “vulnerability” persists. So far, as will be seen below, the Indian approach to strategic stability has been informal and political rather than formal and technical. But continuing stress on credibility and vulnerability may push it toward a more operational bias, in which case arms control will tend to be bogged down in technicalities. Of course, it still remains possible that even as inconsistencies endure, the Indian interest in strategic stabilization will remain an unflagging one. After all, it is human to be self-contradictory.
3.2 The India-Pakistan Nuclear Dialogue

3.2.1 Background

(i) Strategic Relationships and Arms Control

Relationships between hostile nuclear powers have historically followed similar patterns. Mutual antagonisms have led to rising tensions, crises and, following a period of confrontation, negotiations to bring a measure of stability. This happened during the Cold War when the Cuban Missile Crisis (1962) impelled the United States and the Soviet Union to engage in talks leading to agreements on nuclear risk reduction. Similarly, the armed clashes between Soviet and Chinese troops in 1969 led to a tense peace between the belligerents. In both cases, the nuclear rivals realized that the risk of nuclear conflict was not worth any conceivable political objective they may have had. In both cases, the rivals exercised restraint and avoided escalation by stopping two thresholds below nuclear conflict, i.e., below the lower threshold that would have taken them into full-scale conventional war. Nuclear confrontation creates a high degree of interdependence between states. The notion of “winning” a war is theoretical, not practical. Both have too much to lose should war break out. Crises bring them so close to war that they “discover” the risks of confrontation, and draw back. Dialogue follows. But it must be remembered that the underlying political problem does not end. In the Cold War, the success of arms control did not bring an end to the basic conflict of interests between the United States and the Soviet Union. The US-Soviet relationship continued to have ups and downs until it was eventually transformed by broad-based political (and not arms control) negotiation between its chief participants. Similarly, the Soviet-Chinese territorial dispute and its attendant tensions continued long after their negotiated end to the military clashes. The India-Pakistan relationship has been analogous.

(ii) India and Pakistan: Conflict and Recurring Crises
The territorial dispute over Kashmir has been the source of endless hostility between India and Pakistan. Apart from wars in 1947-48, 1965, and 1971, the two states have been involved in a series of crises in 1986-87, 1990, 1999, and 2001-02. All these crises have coincided with the advent of nuclear weapons (though the two countries officially went nuclear in 1998, the process of acquiring bombs in the basement had begun much earlier). The last two crises were the most serious, with fighting occurring in 1999 and massive deployment of conventional forces by both sides in 2001-02. The behaviour of the South Asian nuclear rivals was similar to that of other hostile nuclear pairs described above. In each crisis, India and Pakistan engaged in conventional force confrontation but backed away from a full-scale conventional war because of the risk of escalation. The 1999 Kargil crisis was followed by a brief but unsuccessful attempt to negotiate at the Agra Summit in 2001 between President Pervez Musharraf and Prime Minister Atal Behari Vajpayee. Post-2001-02 negotiations have been more sustained and fruitful. However, the underlying problems of the Kashmir dispute and Pakistani backing for terrorists active in India have not been resolved. The key question is whether the issue of strategic stability can be separated from the political dispute between the two countries. In this context, it may be noted that India and China have been able to achieve such a separation despite a history of war, occasional crises and a hitherto unresolved territorial dispute.

(iii) Similarities and Differences between India and Pakistan, and Implications for Strategic Stability

It is often argued that the India-Pakistan strategic relationship is inherently unstable because of fundamental differences between the two countries. First, India is a democratic state, whereas Pakistan is basically controlled by its army, and military rulers are prone to resort to the use of military force in resolving disputes. Second, India’s posture is a retaliation-only one, while Pakistani doctrine favours first use of nuclear weapons. Third, India is a status quo power, whereas Pakistan is a revisionist power and more likely to rock the strategic boat. Fourth, India rejects counterforce targeting and nuclear warfighting, but Pakistan does not.

46 On these and other crises, see Sumit Ganguly and Devin T. Hagerty, Fearful Symmetry: India-Pakistan Crises in the Shadow of Nuclear Weapons (New Delhi: Oxford University Press, 2005).
47 For a comparison of the two sets of relationships, see Rajesh M. Basrur, “Nuclear India at the Crossroads,” Arms Control Today, 33, 7 (September 2003), pp. 7-11.
But none of this explains the reality that both powers have exhibited similar patterns of behaviour in their strategic relationship. First, both have histories of cautious conventional warfare, which indicates that they have a mutually understanding on low thresholds of unacceptable damage. Second, both have adopted non-deployed postures from which they have not shifted in spite of high levels of tension between them. Third, both have refrained from testing, indicating that they believe minimum deterrence is in place and does not require greater sophistication in capabilities. Fourth, and above all, both have displayed a significant degree of caution in their confrontations.\(^{48}\) In the Kargil conflict of 1999, at considerable cost to itself, India refrained from crossing the Line of Control (LoC) in counter-attacking Pakistani forces, while Pakistan bore heavy losses and desisted from backing up its retreating troops. In the 2001-02 crisis, India again did not cross the LoC, while Pakistan did make some significant concessions in the face of a war threat. Finally, both countries have shown willingness to engage in attempts at stabilization through dialogue without coming anywhere nuclear conflict. Thus, India and Pakistan have mirrored each other's self-control, which overrides their differences and provides room for optimism about the future of their strategic relationship.

3.2.2 The India-Pakistan Nuclear Dialogue

(i) Background

Though their relationship has been dogged by repeated confrontations, India and Pakistan have a significant history of engaging in dialogue for stability. Prior to 1998, they established a number of non-nuclear agreements.\(^{49}\) Some examples of the various types of agreements in place are:

- **Water Rights:** The Indus Treaty (1962), an agreement on sharing of the waters of the transnational Indus River Basin.


• **Communication Measures:** A dedicated “hotline” between their respective Directors-General of Military Operations (1971) and a separate one between their prime ministers (1997), the latter being a revival of an earlier link which had fallen into disuse.

• **Notification Measures:** An agreement on prior notification of military exercises (1991).

• **Transparency Measures:** Invitation of foreign observers during military exercises by both countries in the late 1980s and early 1990s.

• **Border Security Measures:** The Agreement on the Violation of Airspace (1992), which prohibits combat aircraft from flying within a zone ten kilometres on either side of each other’s airspace, and prohibits unarmed aircraft from flying within one kilometre of either side’s airspace.

• **Consultation Measures:** The establishment of an Indo-Pakistani Joint Commission (1982) to facilitate ministerial-level discussion, later (1990) replaced by regular foreign secretary-level meetings.

Given this background, it is not surprising that nuclearization has also produced attempts at stabilization. Although the post-Kargil Agra summit ended in failure, the renewal of crisis in 2001-02 brought a more wide-ranging – and still on-going – series of discussions starting in February 2004 known as the India-Pakistan Composite Dialogue. The eight-point agenda of the dialogue encompasses Peace and Security including CBMs, Jammu and Kashmir, Siachen, Sir Creek, Wullar Barrage/Tulbul Navigation Project, Terrorism and Drug Trafficking, Economic and Cultural Cooperation, and Promotion of Friendly Exchanges in Various Fields. The nuclear dialogue falls under the first category.

**(ii) Initial Movement toward Nuclear Dialogue**

An early CBM in the nuclear realm was the India-Pakistan Agreement on Non-attack of Nuclear Facilities (1988), which committed the signatories to exchange lists of all nuclear-related facilities and to refrain from attacking each other’s facilities. This proto-nuclear agreement involved the recognition that nuclear facilities may be viewed as weapons for the

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enemy when they are targeted. The agreement occurred at the time when both were developing their capabilities covertly. It has been scrupulously observed even when tensions have been high. After the two publicly adopted nuclear deterrence doctrines and postures in 1998, they took a step forward with the Lahore Memorandum of Understanding (MoU) in 1999. Under the MoU, the two sides agreed to

- Engage in bilateral consultations on security concepts and doctrines;
- Provide advance notification of impending ballistic missile tests;
- Undertake national measures to reduce the risk of accidental or unauthorised use of nuclear weapons, and to notify each other in case such an event should occur;
- Abide by their respective unilateral moratoria on nuclear testing;
- Conclude an agreement on avoiding incidents at sea; and
- Engage in consultations on existing and new CBMs, communications links, and security, disarmament and non-proliferation issues.

The Kargil conflict (1999) brought the negotiation process to an abrupt halt. However, negotiations resumed in 2004 as part of the composite dialogue and, following a two-day meeting of officials, the two sides agreed in June that, among other things,

- The existing hotline between their Directors-General of Military Operations would be upgraded;
- A new hotline would be established between their Foreign Secretaries;
- Negotiations would commence on technical parameters for a missile test notification agreement; and
- Both would continue their respective testing moratoria.

(iii) Nuclear Confidence Building: A Work in Progress

Building on the background of the Lahore MoU and a joint statement in June 2004, a series of expert level talks was launched on nuclear CBMs in December 2004. In August 2005, the two sides agreed on

- Establishment of a secure hotline between their foreign secretaries, and

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51 For an early focus on this possibility, see Bennett Ramberg, Nuclear Power Plants as Weapons for the Enemy: An Unrecognized Peril ((Berkeley, CA; University of California Press, 1980).
• Pre-notification of flight tests of ballistic missiles. This involved formalization of a process that had already become a convention between them.

The hotline agreement is a useful communications measure for the two sides to establish immediate contact in the event of a crisis, or of actual hostilities breaking out, whether by design or not, or in case a destabilizing incident such as a major act of terrorism or an accidental launch should occur. The level of foreign secretaries is appropriate since they are executives who have knowledge but not immediate decision making power, which must be made by a political leadership that generally has limited direct and detailed knowledge of the subject.

The launch notification agreement provides for a minimum three-day advance notice of intent to launch a surface-to-surface ballistic missile within a five-day window. It also states that such a launch will not be from a site less than 40 km from the international border or LoC, that its trajectory should be at a minimum of 40 km horizontally from the international border or LoC, and that the point of impact should be at least 70 km from the border or LoC. The purpose of the agreement is to ensure that each is aware of a forthcoming launch and that there is no possibility of misperception resulting from an unexpected launch. The hotline is a useful back-up in case a launch is misdirected.

In August 2005 and January 2006, India and Pakistan agreed to

• Continue consultations on national measures to reduce the risk of unauthorized or accidental use of nuclear weapons. Strong command and control systems, which need not be identical, would be a greatly stabilizing factor, particularly if each were to inform the other of their general nature.

• Consult each other on security concepts and nuclear doctrines. It would be extremely useful if the two sides were able to agree on issues such as credibility (indeed, of its relative unimportance), what is meant by counterforce and countervalue targeting, and so on.

• Discuss an agreement on preventing incidents at sea and in the air. Since sea and air boundaries are less clear than land borders, there is a greater chance of combat
occurring between naval and air forces. A set of guidelines for avoiding hostile engagements or provocations would help maintain stability.

- Deliberate on not locating strike formations permanently near their border. This is a key issue because the nature of contemporary warfare has changed from an emphasis on slow-moving massed armour to a focus on quick and limited strikes by rapid action forces. The stationing of such forces close to the border would tend to keep tensions relatively high.

Future nuclear confidence building could extend to the establishment of a nuclear risk reduction centre as a continuously functioning communications hub, extension of the missile test notification regime to cover cruise missiles, and an agreement not to place missiles within an agreed distance form the border/LoC. More substantial agreements on limiting numbers or eliminating short-range missiles are at present not foreseeable. The reasons for this are given below.

3.2.3 Assessment and Prospects

The process of building confidence has been relatively slow and of a very limited scope. There are a number of reasons for this.

(i) Decision makers in both countries believe that deterrence is in place and is essentially stable.\(^{52}\) Hence there is no felt need for stabilization except as part of a wider package of confidence building.

(ii) There is not much pressure for stabilization because the use of nuclear weapons has never been imminent. Despite repeated crises, India and Pakistan have maintained their tacit understanding on non-deployment. Also, the two countries are not engaged in a costly arms race in the way that the United States and the Soviet Union were during the Cold War, hence the need for restraint in spending is not pressing.

\(^{52}\) D. Suba Chandran, “Indo-Pak Nuclear CBMs: Looking beyond the Pre-notification Agreement on Missiles,” Institute of Peace and Conflict Studies, New Delhi, Article No. 1827, August 22, 2005 <http://www.ipcs.org/Nuclear_articles2.jsp?action=showView&kValue=1840&issue=1015&status=article&mod=a>. 
(iii) For India, the issue of stabilization has more than one face. It is also concerned with China. But because China does not officially recognize India as a nuclear power, a Sino-Indian nuclear risk reduction process is ruled out. For Indian leaders, it is politically un-doable to go beyond a point in engaging Pakistan without establishing a similar process with China.

(iv) Because nuclear confidence building is essentially a political rather than a technical process, it has in-built limits. Its success depends on the overall pace of negotiations and on the basic political equation between the rival powers. As mentioned above, India and China have been able to separate their territorial dispute from the other aspects of their relationship. So far, it is not clear whether the India-Pakistan will be able to accomplish the same.

Thus, there are limits to what the current nuclear dialogue can achieve. The prospects could also be clouded if relations between India and Pakistan were to deteriorate. This could result from a fresh crisis arising from frustration on the part of either country or both, or from the activities of a third party, say if there is a serious terrorist incident. On the other hand, it must be emphasized that the prospects for the emergence of a stable relationship are not inconsiderable. The reasons may be outlined as follows.

(i) By this time, India and Pakistan have established a sustained tacit understanding that deterrence works, and that it does not need deployed forces to make it really “credible.”

(ii) There is evidence that there has been a learning process under way, and that both have realised that the generation of crises does not accomplish their respective objectives. The last two crises in 1999 and 2001-02 generated a great deal of heat, but also brought considerable costs and left the Kashmir and terrorism issues unresolved.

(iii) India’s rapid economic growth and the rapid improvement in the Indo-US relationship have begun to alter the balance of power in the subcontinent. If the Indo-US nuclear agreement of July 2005, cemented during President Bush’s visit to India in March 2006, goes through the US Congress and the Nuclear Suppliers Group, India’s position will grow much stronger and compel China to come to terms with it as a nuclear power. This in turn will put Pakistan under pressure. The result, combined with the exigencies of the South Asian Free Trade Agreement, may well
be a marked improvement in India-Pakistan relations and the onset of a higher degree of nuclear stability in the region.
3.3 Conclusion

This study has shown that India’s nuclear posture has been characterized by a high degree of stability. Because of its preference for a subdued and defensive nuclear posture, the risk of provoking its nuclear adversaries, Pakistan and China, has been low. Indian interest in stabilization has always been strong, which accounts for its pursuance of nuclear stabilization with Pakistan. This has, of course, been possible because of Pakistan’s similar posture. The study particularly notes that the convergences between the Indian and Pakistani postures are conducive to moderation. This convergence is reflected in their recurring efforts to negotiate their way out of a pattern of repeated confrontation. Nuclearization brought a series of crises, but these brought no improvement in the position of either. As a result, the two countries have launched what is their most sustained effort to negotiate improvements in their relationship.

The nuclear dialogue has been successful in bringing some limited agreements which could point the way to more. However, there are inherent limitations to nuclear risk reduction for a number of reasons, not least of which is that neither side perceives a level of risk that would necessitate robust arms control efforts. But if the prospects for nuclear dialogue are limited, that does not mean we should be pessimistic about the overall character of the relationship. As in the case of the post-Cold War US-Russian nuclear relationship, we may yet see in the India-Pakistan relationship a shift from deep hostility to symbolic competition.

What might be the impact of the increasingly close India-United States relationship, and particularly the fruition of the India-US nuclear agreement of July 2005, on India’s posture and on the India-Pakistan dialogue? Pakistan’s response has been negative, complaining that the agreement adversely impacts its security because it would “only encourage India to continue its weapons programme without any constraint or inhibition.” This echoes the widespread anxiety in the US nonproliferation community that American supplies of reactor-grade uranium will allow Indian facilities to concentrate on generating weapon-grade uranium, thereby accelerating its nuclear weapons program. This is a misconceived notion.

The apprehension that India will be encouraged to produce a much larger number of bombs than it would without the agreement fails to understand Indian strategic culture. India’s

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<http://www.dailytimes.com.pk/default.asp?page=2006\03\18\story_18-3-2006_pg7_5>
minimalist approach to nuclear weapons is averse to arms racing. It has shown no interest in catching up with China, only in establishing the capacity to deter it with missiles of adequate range. In theory, arms racing is possible on grounds of credibility and vulnerability, concepts which Indian strategic thinkers often express. But if such concerns were serious, they should by now have led to the active deployment of India's forces on at least the Pakistani front. American critics who fear the expansion of the Indian arsenal are prisoners of their own assured destruction discourse, which led to the runaway expansion of their arsenal during the Cold War. They find it hard to appreciate that while India is a nuclear-armed nation, it is different from their own, for it is content with a handful of tests, eschews deployment even during severe crises (as it did in 1999 and 2001-02), and rejects nuclear balancing. Pakistan's criticism, on the other hand, stems from the political fear that a close India-US relationship will diminish its bargaining position with India vis-à-vis Kashmir. Indeed, it seems likely that as Indo-US relations grow warmer, Pakistan will eventually be compelled to give up its revisionist stance on Kashmir (which includes the backing of terrorist groups) and come to terms with India by seeking an understanding similar to that which has emerged in India-China relations.

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NB: This study draws from the following of my earlier writings:


"Nuclear Command-and-Control and Strategic Politics in South Asia," *Contemporary South Asia*, 14, 2 (June 2005), pp. 155-161


Interview of the External Affairs Minister Mr. Jaswant Singh

28 November, 1999


You have been engaged in extended talks with the US since the nuclear tests last year. How would you assess the results so far?

By first, restating the objectives from our side. They are two fold: in the first place, to reconcile the stated US non-proliferation concerns with India’s national security objectives; secondly, and, in a broader context, to develop greater mutual understanding so that both countries are enabled to work together in tapping the real potential of a qualitatively new relationship, essential in this post-Cold War environment.

The results of my discussions with Strobe Talbott are encouraging. There is recognition that India shall maintain a minimum nuclear deterrent as determined by us. There is now no longer any talk of 'roll-back'. The US also accepts that India's security concerns are not geographically limited. Foreign policy tasks and challenges are a continuing process, therefore, we need to consolidate these understandings across all sections that make up the US foreign policy establishment.

Do you have a time frame for concluding this dialogue?

In the management of foreign policy, deadlines are both impractical and unrealistic. But if we manage through objectives then the first part is the restoration of our relationship to the pre-May, 1998 position. As for the next, I would consider it attained when both India and the USA engage in regular dialogue on a range of issues covering bilateral, regional and global political and economic issues.

Can you define these issues?
Of course, I cannot draw up a total list. But, self evidently, these would range from discussing cooperation in the field of energy, science & technology, environment, trade, taxation, economic development etc., to global concerns like terrorism, narcotics, non-proliferation, disarmament, reform of multilateral institutions, expansion of UN Security Council, regional developments in Asia-Pacific etc. Obviously, a multifaceted dialogue of this nature can simply not imply an agreement on all. It is the density and depth of engagement that are the criteria.

A principal item on the agenda is the CTBT and there seems to be considerable confusion about India's stand on this issue. Where exactly are we?

Our stand on the CTBT has been clear. In 1996, we decided that we could not accept the CTBT because it was not consistent with India's national security interest. Over decades, successive governments took necessary steps to safeguard India's nuclear option. In 1996, it was clear to all that subscription to the CTBT at that time would have limited India's nuclear potential at an unacceptably low level. After conducting the nuclear tests of May, 1998, to validate and update our technology, we have ensured the credibility of our nuclear deterrent into the foreseeable future; our scientists are now confident of conducting sub-critical tests, also other non-explosive R&D activity necessary for the purpose. That is why, we declared a voluntary moratorium. This, in essence, meets the basic obligations of the CTBT. We also announced a willingness to convert this undertaking into a de jure obligation. Clearly, this could not be done in a political vacuum. A positive environment had to be created. In reaction, a number of countries decided to impose restrictive economic measures on India. We have conveyed our disappointment at these actions. That, however, does not mean that we do not value our bilateral relationships with these countries. Our endeavour has been to generate a better appreciation of India's security concerns. Obviously, this is possible only through a sustained, bilateral dialogue process. An understanding in this regard will restore our relationship to the pre-May 1998 position. I am also optimistic that this process of restoration will result in an acceptance of a secure, self-confident India, thus imparting a new momentum to these ties.

At the same time, there is no denying that the manner in which the CTBT was negotiated, particularly, during the last stages, left a great deal to be desired. This led to resentment against the proposed treaty. Many in India see it as part of a discriminatory, nuclear non-proliferation regime.
The Government's commitment to nuclear non-proliferation remains unchanged. The priority of our meeting the country's national security concerns having been addressed, the government believes that we now need to convey reassurance to the international community and, in this regard, desires to develop a national consensus. The need for a consensus in any democratic society is self-evident. I have explained this in the past to the US administration, and they better understand this approach after their own difficulties on this issue in their Senate.

**There appears to be lack of clarity about signing and ratification. Can you elaborate?**

Three separate decisions are required of the government as part of adherence to any international treaty: signature, ratification, and deposition of the instrument of ratification. These decisions are taken by the Cabinet. Each of them is a separate decision. To recall a recent example: In January, 1993, the Cabinet decided that India will become a signatory to the Chemical Weapons Convention; the decision to ratify was taken in October, 1995, followed by another decision to deposit the instrument of ratification in September, 1996.

**In your view, how far should India go in terms of its adherence to the CTBT at this stage, particularly in light of the uncertainty about the Treaty's future created by the US Senate vote?**

As I have already clarified, the process of adherence to an international treaty is a step by step process. While India's decisions will be made by the Indian government, there is no denying that this negative vote by the US Senate does have a bearing on the future of this treaty. I would, therefore, consider it natural for India to also dis-aggregate its decision.

**Is India ready to join in a moratorium on the production of fissile material for nuclear weapon purposes?**

We have, after the tests last year, announced our readiness to engage in multilateral negotiations in the Conference on Disarmament in Geneva, for a non-discriminatory and verifiable treaty to ban future production of fissile materials for nuclear weapon purposes. This decision was taken after due consideration, which included an assessment of time frames for negotiations and entry into force of an FMCT. At this stage, India cannot accept a voluntary moratorium on production of fissile materials. Let me add that FMCT negotiations are a
complex exercise, it will be important, therefore, as we go along, to constantly monitor the pace, direction and content of these negotiations.

**Export controls is another element of dialogue with the US. What are the prospects of an understanding in this area?**

India has remained committed to non-proliferation and maintains a highly effective system of export controls on sensitive and dual use technologies and equipment. We have conveyed our willingness to strengthen this further where necessary. In this regard, an inter-ministerial expert group has been established. I must add that we do remain greatly concerned about the fact that certain civilian programmes in high technology areas e.g. space etc. remain targeted. Our participation in ad hoc export control regimes such as Nuclear Suppliers Group, MTCR etc will be on the basis of equality. US does appreciate that India has a system of laws and an effective institutional mechanism to implement non-proliferation related export controls but we need to make further progress.

**There is a perception in the international community that the document prepared by the National Security Advisory Board for the National Security Council is India's official nuclear doctrine. What is the status of this document?**

Let me correct this misperception. The National Security Advisory Board is a group of non-official strategic experts and analysts. It was tasked by the National Security Council to prepare a number of papers including one on a possible 'Indian Nuclear Doctrine'. This they prepared and submitted to the National Security Advisor, also releasing it publicly for larger debate. That debate is now under way. It is thus not a policy document of the Government of India.

**Would you like to elaborate on what then is the essence and thinking on India's doctrine?**

The key elements of India's nuclear policy were spelt out by Prime Minister in Parliament last December. To recapitulate briefly:

a) India shall maintain a minimum nuclear deterrent and shall undertake necessary measures to ensure the credibility of it.
b) India has declared a moratorium on undertaking any further underground nuclear test explosions but R&D activity including computer simulation and sub-critical tests will be conducted as necessary.

c) Development work on an extended range Agni missile is underway and a successful flight test was carried out earlier this year. Additional flight testing will be undertaken in a manner that is non-provocative, transparent, and consistent with all established international norms and practices.

d) India has declared a no-first-use doctrine. This has implicit the principle that India shall not use nuclear weapons against non-nuclear-weapon states.

e) In order that our minimum deterrent be credible, we shall adopt and maintain a deployment posture that ensures survivability of assets. Such a posture, obviously, provides for greater safety and security.

f) India will not engage in any arms race. We shall not, therefore, pursue an open-ended programme.

g) A civilian command and control system, with necessary safeguards, shall cater for all possible contingencies.

h) India’s commitment to global nuclear disarmament remains undiluted. We will continue to work with other like minded countries and take initiatives for moving towards a nuclear-weapon-free-world. We will also seek to negotiate CBMs, both in the conventional and nuclear fields, with the aim of reducing lack of trust in the region.

Many commentators find these elements inconsistent and believe that India has embarked on a programme that will produce a nuclear arsenal larger than that of UK or France. Do you have any comments?

I am aware of such apprehensions. These are born of the Cold War experiences, ideology, indeed, even the clichéd phrases of those sterile years. USA, Russia, UK, France and China - all developed their nuclear weapons as weapons for war fighting. Most nuclear weapon powers follow doctrines of first use, and all of them envisage tactical or sub-strategic roles for their nuclear weapons. Indian thinking is different, principally, because we have discarded the Cold War reference frame of nuclear war fighting. In our view, the principle role of nuclear weapons is to deter their use by an adversary. For this, India needs only that strategic minimum which is credible. With the policy of 'retaliation only', survivability becomes critical to ensure credibility. This 'minimum,' however, cannot be a fixed physical quantification; it is a
dynamic concept but firmly rooted in the strategic environment, technological imperatives and national security needs and the actual size, components, deployment and employment of nuclear forces will be decided taking into account all these factors. No other nuclear weapon state has conceptualized its capabilities in such terms. India can and has done so because it does not intend to engage in an arms race. Therefore, the question of an arsenal larger than that of country X or Y becomes a non-question. For India the question is only one of adequacy, that is credible and thus defines our 'minimum'.

**How would you address concerns about India seeking a "triad"?**

Let me address the issue of 'triad', not because it is part of the NSAB paper, but because there may be genuine misperceptions. It is a known fact that today India has nuclear capable aircraft and mobile land based nuclear capable missiles. We have an R&D programme for a naval version of Prithvi that has been a part of the IGMDP launched in 1983. It is also a fact that many analysts, particularly in Western countries, consider nuclear missiles on submarines to be the most survivable nuclear asset in the scenarios that they have thought of - first strike, second strike, war fighting and so on. Our approach is different. It is, therefore, premature to talk of an Indian 'triad'. R&D programmes will certainly continue, aimed at enhancing survivability and thus, credibility, but decisions on production, deployment and employment etc will be taken on the basis of factors that I have outlined earlier. In short, just as parity is not essential for deterrence, neither is a triad, a pre-requisite for credibility.

Let me suggest that you look at the Indian nuclear deterrent as a 'triad' based on a different set of three dimensions - a deterrent that is minimum but credible because it is survivable and backed by effective civilian command and control to ensure retaliation.

**You appear to be emphasising survivability but will this not affect retaliation?**

No. Retaliation does not have to be instantaneous; it has to be effective and assured. I emphasise this because effective and assured retaliation enhances the credibility of the deterrence. Mobility and dispersal improves survivability. Operating procedures will ensure the transition from peace time deployment modes to a higher state of readiness when required. Our nuclear assets are limited and consistent with no-first-use, we have ensured that these procedures do not tempt an adversary to pre-emption but strengthen deterrence by underlining the political resolve for effective retaliation.
Would it be correct to deduce that India will follow different peace time and war time deployment/postures?

This would be a correct assessment. You know that we would like to convey a sense of assurance in our region, also beyond so that our deployment posture is not perceived as destabilising. We have rejected notions of 'launch on warning postures' that lead to maintaining hair trigger alerts, thus increasing the risks of unauthorized launch. In fact, we have taken an initiative in the UN General Assembly last year, calling on all nuclear weapon states to review such postures, and move to de-alert, thus reducing global nuclear danger.

How does this posture relate to tactical nuclear weapons?

Regarding tactical nuclear weapons, let me remind you that we do not see nuclear weapons as weapons of war fighting. In fact, India sees them only as strategic weapons, whose role is to deter their use by an adversary. Civilian command and control over decisions relating to deployment and alert levels is logical.

Is there any change in India's position on elimination of nuclear weapons or let me say, in India's approach towards this objective?

I would like to emphasise that there is a no dilution of India's commitment to the objective of achieving a nuclear-weapon-free-world. We continue to call for negotiations for a Nuclear Weapons Convention that would prohibit the production, development, deployment and use of all nuclear weapons and also provide for elimination of present stockpile under international verification. India is the only nuclear weapon state to do so. At the same time, we also understand that nuclear disarmament cannot be achieved overnight; it will be a step-by-step process. We approach this process in a practical sense from two directions. On one side, we need to strengthen the norm against nuclear weapons by multilaterally negotiated non-use, no-first-use agreements. From a technical stand point, we need to move away from the present hair trigger postures to a progressively de-alerted state that will reduce the risks of accidental or unauthorised use of nuclear weapons. It will also act as a global CBM. In both these areas, India continues to take initiatives and our resolutions in the UN General Assembly have been adopted with wide-spread support.
Appendix II

Draft Report of National Security Advisory Board
on Indian Nuclear Doctrine

August 17, 1999

Preamble

1.1. The use of nuclear weapons in particular as well as other weapons of mass destruction constitutes the gravest threat to humanity and to peace and stability in the international system. Unlike the other two categories of weapons of mass destruction, biological and chemical weapons which have been outlawed by international treaties, nuclear weapons remain instruments for national and collective security, the possession of which on a selective basis has been sought to be legitimised through permanent extension of the Nuclear Non-proliferation Treaty (NPT) in May 1995. Nuclear weapon states have asserted that they will continue to rely on nuclear weapons with some of them adopting policies to use them even in a non-nuclear context. These developments amount to virtual abandonment of nuclear disarmament. This is a serious setback to the struggle of the international community to abolish weapons of mass destruction.

1.2. India's primary objective is to achieve economic, political, social, scientific and technological development within a peaceful and democratic framework. This requires an environment of durable peace and insurance against potential risks to peace and stability. It will be India's endeavour to proceed towards this overall objective in cooperation with the global democratic trends and to play a constructive role in advancing the international system toward a just, peaceful and equitable order.

1.3. Autonomy of decision making in the developmental process and in strategic matters is an inalienable democratic right of the Indian people. India will strenuously guard this right in a world where nuclear weapons for a select few are sought to be legitimised for an indefinite future, and where there is growing complexity and frequency in the use of force for political purposes.
1.4. India’s security is an integral component of its development process. India continuously aims at promoting an ever-expanding area of peace and stability around it so that developmental priorities can be pursued without disruption.

1.5. However, the very existence of offensive doctrine pertaining to the first use of nuclear weapons and the insistence of some nuclear weapons states on the legitimacy of their use even against non-nuclear weapon countries constitute a threat to peace, stability and

1.6. This document outlines the broad principles for the development, deployment and employment of India’s nuclear forces. Details of policy and strategy concerning force structures, deployment and employment of nuclear forces will flow from this framework and will be laid down separately and kept under constant review.

2. Objectives

2.1. In the absence of global nuclear disarmament India’s strategic interests require effective, credible nuclear deterrence and adequate retaliatory capability should deterrence fail. This is consistent with the UN Charter, which sanctions the right of self-defence.

2.2. The requirements of deterrence should be carefully weighed in the design of Indian nuclear forces and in the strategy to provide for a level of capability consistent with maximum credibility, survivability, effectiveness, safety and security.

2.3. India shall pursue a doctrine of credible minimum nuclear deterrence. In this policy of "retaliation only", the survivability of our arsenal is critical. This is a dynamic concept related to the strategic environment, technological imperatives and the needs of national security. The actual size components, deployment and employment of nuclear forces will be decided in the light of these factors. India’s peacetime posture aims at convincing any potential aggressor that:

(a) any threat of use of nuclear weapons against India shall invoke measures to counter the threat: and

(b) any nuclear attack on India and its forces shall result in punitive retaliation with nuclear weapons to inflict damage unacceptable to the aggressor.
2.4. The fundamental purpose of Indian nuclear weapons is to deter the use and threat of use of nuclear weapons by any State or entity against India and its forces. India will not be the first to initiate a nuclear strike, but will respond with punitive retaliation should deterrence fail.

2.5. India will not resort to the use or threat of use of nuclear weapons against States which do not possess nuclear weapons, or are not aligned with nuclear weapon powers.

2.6. Deterrence requires that India maintain:
(a) Sufficient, survivable and operationally prepared nuclear forces,
(b) a robust command and control system,
(c) effective intelligence and early warning capabilities, and
(d) comprehensive planning and training for operations in line with the strategy, and
(e) the will to employ nuclear forces and weapons

2.7. Highly effective conventional military capabilities shall be maintained to raise the threshold of outbreak both of conventional military conflict as well as that of threat or use of nuclear weapons.

3. Nuclear Forces

3.1. India's nuclear forces will be effective, enduring, diverse, flexible, and responsive to the requirements in accordance with the concept of credible minimum deterrence. These forces will be based on a triad of aircraft, mobile land-based missiles and sea-based assets in keeping with the objectives outlined above.

Survivability of the forces will be enhanced by a combination of multiple redundant systems, mobility, dispersion and deception.

3.2. The doctrine envisages assured capability to shift from peacetime deployment to fully employable forces in the shortest possible time, and the ability to retaliate effectively even in a case of significant degradation by hostile strikes.

4. Credibility and Survivability

The following principles are central to India's nuclear deterrent
4.1. Credibility: Any adversary must know that India can and will retaliate with sufficient nuclear weapons to inflict destruction and punishment that the aggressor will find unacceptable if nuclear weapons are used against India and its forces.

4.2. Effectiveness: The efficacy of India’s nuclear deterrent be maximised through synergy among all elements involving reliability, timeliness, accuracy and weight of the attack.

4.3 Survivability:

(i) India’s nuclear forces and their command and control shall be organised for very high survivability against surprise attacks and for rapid punitive response. They shall be designed and deployed to ensure survival against a first strike and to endure repetitive attrition attempts with adequate retaliatory capabilities for a punishing strike which would be unacceptable to the aggressor.

(ii) Procedures for the continuity of nuclear command and control shall ensure a continuing capability to effectively employ nuclear weapons.

5. Command and Control

5.1. Nuclear weapons shall be tightly controlled and released for use at the highest political level. the authority to release nuclear weapons for use resides in the person of the Prime Minister of India, or the designated successor(s).

5.2. An effective and survivable command and control system with requisite flexibility and responsiveness shall be in place. An integrated operational plan, or a series of sequential plans, predicated on strategic objectives and a targeting policy shall form part of the system.

5.3. For effective employment the unity of command and control of nuclear forces including dual capable delivery systems shall be ensured.

5.4. The survivability of the nuclear arsenal and effective command, control, communications, computing, intelligence and information (C4I2) systems shall be assured.

5.5. The Indian defence forces shall be in a position to, execute operations in an NBC environment with minimal degradation;
5.6. Space based and other assets shall be created to provide early warning, communications, damage/detonation assessment.

6. Security and Safety

6.1. Security: Extraordinary precautions shall be taken to ensure that nuclear weapons, their manufacture, transportation and storage are fully guarded against possible theft, loss, sabotage, damage or unauthorised access or use.

6.2. Safety is an absolute requirement and tamper proof procedures and systems shall be instituted to ensure that unauthorised or inadvertent activation/use of nuclear weapons does not take place and risks of accident are avoided.

6.3. Disaster control: India shall develop an appropriate disaster control system capable of handling the unique requirements of potential incidents involving nuclear weapons and materials;

7. Research and Development

7.1. India should step up efforts in research and development to keep up with technological advances in this field.

7.2. While India is committed to maintain the deployment of a deterrent which is both minimum and credible, it will not accept any restraints on building its R&D capability.

8. Disarmament and Arms Control

8.1. Global, verifiable and non-discriminatory nuclear disarmament is a national security objective. India shall continue its efforts to achieve the goal of a nuclear weapon-free world at an early date.

8.2. Since no-first use of nuclear weapons is India's basic commitment, every effort shall be made to persuade other States possessing nuclear weapons to join an international treaty banning first use.
8.3. Having provided unqualified negative security assurances, India shall work for internationally binding unconditional negative security assurances by nuclear weapon states to non-nuclear weapon states.

8.4. Nuclear arms control measures shall be sought as part of national security policy to reduce potential threats and to protect our own capability and its effectiveness.

8.5. In view of the very high destructive potential of nuclear weapons, appropriate nuclear risk reduction and confidence building measures shall be sought, negotiated and instituted.
The Cabinet Committee on Security Reviews operationalization of India’s Nuclear Doctrine

The Cabinet Committee on Security (CCS) met today to review the progress in operationalizing of India’s nuclear doctrine. The Committee decided that the following information, regarding the nuclear doctrine and operational arrangements governing India’s nuclear assets, should be shared with the public.

1. India’s nuclear doctrine can be summarized as follows:
   (i) Building and maintaining a credible minimum deterrent;
   (ii) A posture of “No First Use”: nuclear weapons will only be used in retaliation against a nuclear attack on Indian territory or on Indian forces anywhere;
   (iii) Nuclear retaliation to a first strike will be massive and designed to inflict unacceptable damage.
   (iv) Nuclear retaliatory attacks can only be authorised by the civilian political leadership through the Nuclear Command Authority.
   (v) Non-use of nuclear weapons against non-nuclear weapon states
   (vi) However, in the event of a major attack against India, or Indian forces anywhere, by
biological or chemical weapons, India will retain the option of retaliating with nuclear weapons;

(vii) A continuance of strict controls on export of nuclear and missile related materials and technologies, participation in the Fissile Material Cutoff Treaty negotiations, and continued observance of the moratorium on nuclear tests.

(viii) Continued commitment to the goal of a nuclear weapon free world, through global, verifiable and non-discriminatory nuclear disarmament.

2. The Nuclear Command Authority comprises a Political Council and an Executive Council. The Political Council is chaired by the Prime Minister. It is the sole body which can authorize the use of nuclear weapons.

3. The Executive Council is chaired by the National Security Advisor. It provides inputs for decision making by the Nuclear Command Authority and executes the directives given to it by the Political Council.

4. The CCS reviewed the existing command and control structures, the state of readiness, the targeting strategy for a retaliatory attack, and operating procedures for various stages of alert and launch. The Committee expressed satisfaction with the overall preparedness. The CCS approved the appointment of a Commander-in-Chief, Strategic Forces Command, to manage and administer all Strategic Forces.

5. The CCS also reviewed and approved the arrangements for alternate chains of command for retaliatory nuclear strikes in all eventualities.

NewDelhi
January 4, 2003
India-Pakistan Agreement on Pre-notification of Flight Testing

AGREEMENT BETWEEN
THE REPUBLIC OF INDIA
AND THE ISLAMIC REPUBLIC OF PAKISTAN
ON PRE-NOTIFICATION OF FLIGHT TESTING OF
BALLISTIC MISSILES

The Government of the Republic of India and the Government of the Islamic Republic of Pakistan, hereinafter referred to as the Parties:-

Recalling the Memorandum of Understanding on 21 February 1999;

Committed to adopt appropriate measures aimed at preventing misunderstanding and misinterpretations and promoting a stable environment of peace and security between the two countries;

Have agreed as follows:

Article 1
Each Party shall provide to the other Party, advance Notification of the flight test that it intends to undertake of any land or sea launched, surface-to-surface ballistic missiles.

Article 2
Each Party shall notify the other Party, no less than three days in advance of their commencement of a five day launch window within which it intends to undertake flight tests of any land or sea launched, surface to surface ballistic missile.

Article 3
Each Party shall issue appropriate NOTAMs and NAVEREAs through their respective authorities.

**Article 4**
The bilateral Pre-Notification shall be conveyed through the respective Foreign Offices and the High Commissions, as per the format annexed to this Agreement.

**Article 5**
Each Party shall ensure that the test launch site (s) do not fall within 40 kms, and the planned impact area does not fall within 70 kms, of the International Boundary or the Line of Control on the side of the Party planning to flight test the ballistic missile.

**Article 6**
Each Party shall also further ensure that the planned trajectory of the ballistic missile being flight tested shall not cross the International Boundary or the Line of Control between India and Pakistan and further, it shall maintain a horizontal distance of at least 40 kms from the International Boundary and the Line of Control.

**Article 7**
The Parties shall treat the bilateral Pre-Notification exchanged under this Agreement as confidential, unless otherwise agreed upon.

**Article 8**
The Parties shall hold consultations, on an annual basis, or more frequently as mutually agreed upon, to review the implementation of the provisions of this Agreement, as well as to consider possible amendments aimed at furthering the objectives of this Agreement. Amendments shall enter into force in accordance with the procedures that shall be agreed upon.

**Article 9**
This Agreement shall enter into force upon signature by the two Parties.

**Article 10**
The Agreement shall remain in force for a period of five years. It will be automatically extend for successive periods of five years at a time unless one or both parties decide otherwise.

**Article 11**
A Party may withdraw from this Agreement by giving six months written notice to the other indicating its intention to abrogate the Agreement.

In witness whereof the undersigned being duly authorized thereto by their respective Governments, have signed this Agreement.

Done at …………… on …………… in two originals, each text being equally authentic.

(Signing Authority)                        (Signing Authority)
Government of the                         Government of the Islamic
Republic of India                          Republic of Pakistan

**FORMAT FOR PRE-NOTIFICATION**

**FOR BALLISTIC MISSILE FLIGHT TESTS**

The Government of ------ hereby notifies to the Government of ------ that it will conduct a flight test of a land or sea launched, surface to surface ballistic missile within the period of ……. to ……..

The test launch site, the planned impact area and the planned trajectory of the ballistic missile conform to the provision of Article 5 & 6 if the Agreement between the Republic of India and the Islamic Republic of Pakistan on Pre-Notification of Flight Testing of Ballistic Missiles.
The concept of Minimum Deterrence in South Asia
A Pakistani perspective

Naeem Salik

4.1 Making Sense of Minimum Deterrence

‘Minimum Deterrence’ is one of the most commonly yet least understood terms in the jargon of nuclear strategy. The few definitions one comes across do not adequately explain the concept. For instance, one of the simplest definitions states that, “Minimum Deterrence is an attempt to prevent enemy attack through reliance on a small nuclear retaliatory force capable of destroying a limited number of key targets”.

This definition, however, leaves more unexplained questions than it answers. According to Rajesh Basrur, ‘the concept of minimum deterrence has not been adequately spelled out and hence might be undermined by pressures emanating from perceived threats or by groups with vested interests.’

The meanings of the term minimum deterrence are made more ambiguous by statements emanating from India and Pakistan, adding qualifiers such as ‘credible’ with minimum deterrence. More recently, another term ‘minimum defensive deterrence’ has been introduced by Pakistani leaders, to further complicate the situation. In the aftermath of the May 1998, nuclear tests both India and Pakistan have espoused the concept of minimum

57 ‘We will keep minimum deterrence’, President Musharraf, address to the Formation Commanders’ Conference, The News, Rawalpindi, April 27, 2005. Also see Musharraf’s address at the Foreign Correspondents Association, Manila, April 21, 2005, Associated Press of Pakistan, News Summary, 21-04-2005.
deterrence yet no one can say with any degree of certainty as to what the term really means to either of these countries. It is also not clear as to whether the two countries themselves have enough faith in their own pronouncements. Then there is the key question, as to whether minimum deterrence is an abstract concept applicable to all contingencies or is it changeable in different sets of circumstances. India has clearly declined to quantify or at least accept some upper ceiling on its nuclear arsenal. India’s then Minister of External Affairs, Jaswant Singh when asked to quantify the size of India’s deterrence forces replied that: “Minimum deterrence is not quantification. It is not a fixity. It is the enunciation of a fixity. The principle is codified in cold war phraseology. It is to be determined in accordance with the reality of and an assessment of the security situation. And as the security situation alters with time determination of minimum deterrence also alters.”

In Pakistan’s case the situation is much simpler in this regard because its nuclear deterrence is solely aimed at deterring any conventional or nuclear threat from India, but India also cites China as a security threat and uses it as a justification for having a larger arsenal, which further complicates the situation. In a letter to President Clinton immediately after India’s nuclear tests in May 1998, Prime Minister Vajpayee said, ‘WE have an overt nuclear weapon state on our border, a state which committed armed aggression against India in 1962.’ Not only did India identify Pakistan and China as the security threats forcing India into carrying out nuclear tests, but Defence Minister George Fernades went a step further by citing US deployments at the Indian Ocean island of Diego Garcia as another threat to India’s security.

Gleaning through the Indian strategic discourse on the issue one comes across a wide range of figures suggested by various analysts ranging from a few dozen nuclear weapons to over 500 weapons. Some of them even advocate that the bulk of India’s weapons inventory should constitute thermonuclear weapons of megaton range.

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61 ibid.
4.1.1 The Basis and the Primary Purpose of Minimum Deterrence:

The concept of minimum deterrence derives from the unique quality of nuclear weapons. Such is the destructive power of each individual nuclear weapon that even a small number can cause unacceptable damage. Emanating from this characteristic of the nuclear weapons is the idea of the great equalising power of the nuclear weapons which was used by the French as a rational for their ‘force de frappe’ in the 1960s. The argument is primarily based on the fact that due to the tremendous power of nuclear weapons, there is no need to match the adversary bomb for bomb and numerical ratios are immaterial unlike conventional weapons. If this argument is embraced in its true spirit it helps in the avoidance of arms racing tendencies based on the action-reaction syndrome and therefore, the ultimate size of the arsenals can be kept at a lower level.

At another plane minimum deterrence posture is normally adopted if the purpose of the nuclear forces is simply to deter war or prevent a nuclear blackmail, but if the objective is ‘war fighting’ the requirement of nuclear weapons both in terms of numbers as well as variety of warheads and delivery systems is grossly multiplied. This is amply supported by the historical evidence. For instance, the Chinese who had a small nuclear force in late 1960s and early 1970s was able to deter both super powers i.e., United States and the USSR. Even today there is no numerical comparison between the American and the Chinese nuclear forces, with China possessing around 20 ICBMs capable of hitting targets on mainland United States, but it is still able to deter the US. However, the Chinese would be forced to improve their nuclear forces both in quantitative as well as qualitative terms, in case the US deploys a fully operational National Missile Defences and theatre missile defences, to prevent the erosion of the credibility of their deterrence.

Based on the above discussion should one assume that minimum deterrence level is a constant number which is unaffected by other developments or is it prone to politico-strategic and technological developments taking place in the broader security landscape. In reality the ultimate size of a minimum deterrence force is for instance, inversely proportional to factors

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63 Ibid, pp-191.

such as the survivability of the force. The greater the survivability of the force, the smaller would be its size and the lesser the survivability of the force, the larger its size. This in turn is related to the force configuration of the adversary. If the opponent has more accurate weapons and delivery systems capable of carrying out counter force strikes, the survivability of the force would be adversely affected by the same proportion. The second related factor is the degree of surety that the weapons would reach their intended targets once launched, which in turn depends on whether the adversary has deployed missile defence systems and their capability to intercept and prevent the incoming missiles/aircraft from reaching their targets. If the survivability is low and/or the opponent has deployed missile defences then obviously the size of the minimum deterrence force would be on the higher side.

In a newspaper article entitled ‘Securing Nuclear Peace’, three senior retired Pakistani officials, Abdul Sattar, Agha Shahi and Zulfiqar Khan argued that: ‘Purely deterrent forces can be relatively modest provided their survivability can be assured against a surprise attack, continued build up of nuclear weapons should be unnecessary. Nor does a strategic arsenal have to match the adversary’s arsenal.’ 65

Both India and Pakistan have pronounced that their minimum deterrence is ‘dynamic’ in nature, which means that it is subject to change by the impact of the extraneous factors such as those described above. Similarly, if the adversary goes on to build up its arsenal to the extent that the differential becomes too great in its favour, it will be difficult to resist the pressure to increase one’s own arsenal by some degree to achieve a greater level of comfort. On the other hand it is an established fact that ‘deterrence’ is a state of mind and if one side starts feeling that it has such an overwhelming advantage that the other side will be self deterred from using its deterrence threat in a crisis situation due to the fear of a devastating retaliation, it will be encouraged to be more adventurous and prone to risk taking.

That is why many analysts are concerned over the impact of the recently concluded Indo-US nuclear deal which will greatly enhance India’s ability to multiply the size of its arsenal. This deal which is ostensibly aimed at supporting India’s civilian nuclear programme will in actual fact free India’s limited domestic uranium reserves for production of fissile material for

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weapons purposes by providing it imported fuel for running its nuclear power plants. Additionally, the US has already offered to provide India with Patriot Ballistic Missile Defence systems. Coupled with the nuclear deal if India goes on to acquire BMDs, it will erode Pakistan's confidence in its existing minimum deterrence levels and would lead to a building up of the arsenals, thereby triggering an undesirable arms race. Given the action-reaction syndrome which has dominated the relations between India and Pakistan over the last six decades, it would be appropriate to review the Indian nuclear doctrine and its thinking about the concept of minimum nuclear deterrence to be able to put the Pakistani thinking on the subject in a proper perspective.

4.1.2 India’s Doctrinal Thinking and the Views of Its Strategic Community

India announced a ‘Draft Nuclear Doctrine’ on 17th of August 1999. Besides other elements one of its main features was the declaration of its intention to have a ‘minimum credible deterrence’. The doctrine however, did not specify the threat, which was intended to be deterred by this ‘minimum credible deterrence’. Thereby, leaving the size of the deterrence open ended. If the Indians had specified China or Pakistan or both these countries combined together as potential sources of threat there was a finite requirement of weapons to achieve a minimum deterrence against this threat. But the Indians deliberately chose to keep it ambiguous so that they could determine the size of their arsenal depending on their ever growing ambitions and pretensions to a regional and global power status. Secondly, by insisting on a ‘credible’ minimum deterrence the Indians were also attempting to stretch the concept of minimum deterrence to denote a relatively larger arsenal rather than a ‘minimal’ size generally associated with the concept. As Basrur argues, ‘India’s stress on credibility of deterrence reflects a lack of clarity as to what constitutes deterrence.’ But one can always question as to whether it reflected a lack of clarity or a deliberately designed and calculated ambiguity.

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69 Basrur, op.cit.
The Draft Nuclear Doctrine in fact at its subsection 2.3 amplifies the policy of credible minimum deterrence stating that, “This is a dynamic concept related to strategic environment, technological imperatives and the needs of national security. The actual size, components, deployment and employment of nuclear forces will be decided in the light of these factors.” 70 This statement very clearly indicates that justification for a continuous up-gradation and increase in the size of the arsenal has been built into the doctrine. Other statements in the doctrine also point in the same direction such as the one which says that ‘any nuclear attack on India and its forces shall result in a punitive retaliation with nuclear weapons to inflict damage unacceptable to an aggressor.’ 71 Now punitive retaliation certainly cannot be inflicted with minimal size of nuclear forces and would require a much stronger force. This declaration has been further modified in a later document issued by the Indian government in January 2003 while announcing the setting up of its nuclear command and control structure, wherein it states that, ‘in the event of a major attack against India or Indian forces anywhere, by biological or chemical weapons India will retain the option of retaliating with nuclear weapons.’ 72 This statement implies that not only the geographical extent of India’s deterrence has been extended beyond its territory but it has been stretched to cover even chemical and biological attacks. This expansion in the scope of the doctrine would obviously lead to an increase in the number of nuclear weapons. Then there are other contradictory statements in the doctrine. For instance the declaration of a policy of ‘no first use’ which has earned India many brownie points is in actual fact not as benign as it appears to be. This policy in practical terms means that India will wait for the enemy to carry out a first strike and after riding out that strike its forces would launch a ‘punitive’ retaliatory strike, which means that it will need to have a fairly large nuclear force which even after suffering losses would be strong enough to carry out a powerful retaliatory strike. Now once a large force structure has been created on the basis of this policy, India can use the nuclear forces either in a first or second strike mode during a crisis situation.

Some Indian analysts have argued that a ‘no first use’ policy is only valid in peacetime and would be thrown out of the window once the war starts. 73 Brigadier V.K. Nair has quoted

70 PR Chari et al, Nuclear Stability in Southern Asia, pp. 185-6.
71 Ibid.
72 ‘Nuclear Command Authority comes into being’, The Hindu, January 5, 2003.
James Schlesinger’s argument that, “doctrines control the minds of men only in periods of non-emergency. They do not necessarily control the minds of men during periods of emergency. In the moment of truth, when the possibility of major devastation occurs, one is likely to discover sudden changes in doctrine.”  Though no figures have been indicated by the Indian government about the size of its nuclear arsenal, and even Indian security analysts have widely divergent views on it and therefore, one comes across figures ranging from a few dozen weapons to over 500 weapons. Then there are contradictions in the stated positions both at the official as well as non-official level. The doctrine itself in the same breath talks about credible minimum deterrence as well as a triad based arsenal with redundancies built into it. Brigadier Nair discussing deterrence against Pakistan suggests that India’s nuclear deterrent, ‘must rest on an assured ability to administer retribution of a magnitude that would demolish the national fabric of that country.” This statement clearly reflects a thinking, which goes far beyond the ability to cause unacceptable damage and into the realm of assured destruction, certainly beyond the scope and objective of minimum deterrence. He recommends a force of 132 warheads to deter both Pakistan and China. Interestingly, he has assigned 23 warheads including 13 warheads of 1 mega ton each and the rest ranging between 15 kilotons to 500 kilotons. He has set aside only 14 warheads for use against Chinese targets all of 1 mega ton each. He then adds on to these 65% reserves for technical failures and 20% post war reserves as well.

In May 2004, India released its ‘Maritime Doctrine’ which envisages deployment of 24 ballistic missile submarines by 2030. This coupled with the land and air legs of the triad would definitely go well beyond the realm of minimum deterrence force posture. Interestingly, Britain which is one of the five established and recognized nuclear powers has only 4 nuclear powered submarines out of which only one is on patrol at any given time carrying a total of 48 warheads.

K. Subrahmaniam, one of the most senior Indian analysts and the Chairperson of the National Security Advisory Board (NSAB), which produced India’s Draft Nuclear Doctrine, wrote as far

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75 See Gurmeet Kanwal, op.cit. p.121-23.
76 Nair, op.cit. p.137.
77 Ibid. p.181.
78 The Nuclear Doctrines of India and Pakistan, Monterey Institute of International Studies, December 2005.
back as 1994 that: ‘The real threat is in terms of nuclear blackmail...An additional factor is the nuclear asymmetry being translated into bargaining leverage in the relationship between India and China and India and Pakistan. To deal with such contingencies a minimum deterrence posture will be adequate... Taking all these factors into account a force of around 60 deliverable warheads could meet adequately India’s need for a minimum deterrent.’

He goes on to argue that India would neither require large thermonuclear weapons with yields in the thermonuclear range, nor would it need neutron bombs which are suited for battlefield use and for war fighting purposes. In the post Pokhran-II tests however, he seems to have some change of heart and while still advocating minimum deterrence he states that, ‘whether it is 150, 250 or 300, the Indian deterrent will still be a minimum one compared to others except Pakistan.’ Air Commodore Jasjit Singh, another senior analyst also believes in ‘minimum deterrence’ and finds it difficult to visualise an arsenal consisting of anything more than double digit numbers of warheads. This would mean that the number of warheads could be anywhere up to 99 but less than hundred. In his opinion it would ‘infructuous’ for India to pursue an ICBM capability. Bharat Karnad, however, thinks otherwise and advocated in an article published in the ‘United Services Institute of India (USI) Journal in October 1998 that India’s nuclear arsenal should comprise 400 thermonuclear weapons fitted on the ICBMs. Later on, he seems to have further refined his calculations and proposed a figure of 328 warheads including 253 thermonuclear warheads based on a triad of delivery systems to be gradually built over a period of three decades. Elsewhere, Karnad advocating rationalization of India’s testing and weaponisation plans seems to suggest a very ambitious goals and by implication much larger size for India’s deterrent forces saying that: “Collateral security objectives of dampening Pakistani ardour for mindless confrontation but, more importantly, for containing a wily and wilful China and of deterring an over arching and a punitive minded United States leading the Western combine of nations, will be realized provided the deterrence solution is right.”

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80 Gurmeet Kanwal, op. cit. p.122.
81 Ibid. p.125.
82 Mattoo, op.cit. p.111.
Rear Admiral (Retired) Raja Menon, a prolific writer on nuclear and strategic issues and author of the book 'India’s Nuclear Strategy' suggests that by 2020 India’s nuclear arsenal should be predominantly based on SSBNs (Nuclear Powered Submarines). He goes on to recommend that by 2030 an all missile land based force of 5 regiments each having twelve missiles. Which means a total of 60 missiles, but he further suggests that 50% of these should have four MIRVED warheads each. This will bring the total figure of warheads to 150 for the land component alone. As for the naval component he suggests a force of 6 SSBNs each carrying 12 MIRVED missiles and somehow has arrived at a figure of 216 – 380 warheads and against Pakistan he recommends a force of 200 cruise missiles including 36 nuclear tipped missiles. This brings us to a figure of between 400 – 560 warheads which certainly does not fall in the category of a minimum deterrence force. Mr M.K. Rasgotra, a former Foreign Secretary of India has suggested 30 warheads to be deployed against Pakistan, 60 for deployment against China, and another 30 in reserve. This would bring us to a figure of 120 in all which appears to a more realistic figure in the context of a minimum deterrence policy.

4.1.3 Pakistani Views on Minimum Nuclear Deterrence

Pakistan like India has not declared the number of warheads it plans to build/deploy to support its ‘minimum nuclear deterrence’ posture. Speaking at a local college in Beijing during one of his visits to China, then Chief Executive General Musharraf declared that Pakistan had no intention of getting embroiled into an arms race with India. He went on to add that: ‘The rationale behind our nuclear policy is purely security and we only want to maintain a minimum credible deterrence to deter any aggression against our homeland. Pakistan unlike India does not harbour any ambitions or regional and global status. We fully support the creation of a strategic self restraint regime in the subcontinent and expect a positive response from our neighbour.’

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83 Gurmeet Kanwal, op. cit. p.123.
84 Ibid. p.122.
85 http://www.peopledaily.com.cn/english/
On many other occasions including his televised Press Conference in February 2004, he has declared that Pakistan has achieved the minimum deterrence level that it had quantified for itself. Speaking at the occasion of launch of JF-17 aircraft he declared that, “Pakistan would maintain level of defensive deterrence in both conventional and unconventional fields as it wanted peace with dignity and honour.”

While talking to senior journalists in Rawalpindi on 6th of March 2006, President Musharraf reiterated his claim that Pakistan has already achieved the levels it had quantified for its ‘minimum defensive deterrence’. However, qualitative improvements would continue. For some time now President Musharraf has been using a new term ‘minimum defensive deterrence’ instead of ‘minimum credible deterrence’. However, it is not known as to whether this is intended to convey the same meaning as that of ‘minimum deterrence’ or does it have some different connotations or is meant to indicate some subtle differences from minimum credible deterrence. It may well be an attempt to use a term distinctly different from the Indian usage of ‘credible minimum deterrence’ and possibly to signify that Pakistan’s deterrence is being maintained not only at the minimum required level but is aimed at ensuring the defence of the country against aggression and is not meant to be used for committed aggression against any other state.

Three senior Pakistani officials Abdul Sattar, Agha Shahi and Zulfiqar Ali Khan in a joint article claimed that: “Deterrence was the sole aim and a small arsenal was considered adequate. At no time did Pakistan contemplate use of nuclear weapons for war fighting or seek to develop capability for a pre-emptive attack. Apart from the obvious constraint of resources, it was not so unrealistic as to entertain such thoughts. India is too large and too well armed to be vulnerable to a disabling strike. Besides, any such attempt would provoke retaliation with disastrous consequences.”

This line of argument clearly indicates a rational and realistic approach to deterrence, discarding any notions of a futile arms race with India or the temptation to build up an arsenal in excess of Pakistan’s legitimate security needs. However, these analysts appear to be reluctant to suggest any figures to quantify the size of Pakistan’s nuclear forces. In fact, they believe that ‘minimum deterrence’ is not an abstract number which remains static for all times.

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87 Ibid.
to come but something which is subject to change with changing circumstances. They believe that the efficacy of Pakistan’s deterrent can only be maintained by keeping the size of the force flexible, explaining that: “Minimum deterrence has been and should continue to be the guiding principle of Pakistan’s nuclear pursuit. Of course minimum cannot be defined in static numbers. In the absence of mutual restraints, the size of Pakistan’s arsenal and its deployment pattern have to be adjusted to ward off dangers of pre-emption and interception. Only then can deterrence remain efficacious.” 89

Later speaking at a seminar at Islamabad in November 1999, Foreign Minister Abdul Sattar elaborated that Pakistan was compelled to go nuclear to deter aggression and prevent war and to safeguard its peace and security. Its decision was in no way motivated by any pretension to great power status or desire for regional domination. He emphasized Pakistan’s determination not to get embroiled in a nuclear arms race with India, adding that: “Minimum nuclear deterrence will remain the guiding principle of our nuclear strategy. The minimum cannot be quantified in static numbers. The Indian build up would necessitate review and reassessment….. But we shall not engage in any nuclear competition or arms race.”90

At an international seminar on Command and Control of Nuclear Weapons at Islamabad in February 2000, former Foreign Minister and a senior retired diplomat Agha Shahi invoked the traditional ‘action-reaction syndrome’ which has dominated Indo-Pakistan relations for more than half a century, arguing that since India wants to keep the size of its minimum deterrent flexible and subject to change with changing circumstances, Pakistan will per force have to keep its deterrent dynamic in the same way.91

In his address to the National Defence College in May 2000, Foreign Minister Abdul Sattar expressed his belief that Pakistan’s policy of Minimum Credible Deterrence will obviate any strategic arms race.92 However, Pakistani and Indian security policies and force structures especially the nuclear forces are very tightly coupled and one cannot remain immune to any changes occurring in the configuration and size of the other. The situation is further compounded by the intensely emotional public involvement in such issues on both sides of

89 ibid.
91 Ibid, p.55.
the border thereby creating irresistible pressures for the decision makers. Keeping these factors in mind Pakistan had made a proposal for a ‘Strategic Restraint Regime’ for South Asia as far back as October 1998 and has continued to push it in the bilateral exchanges between the two countries but the Indians have been stone walling and refusing to even consider these proposals aimed at restraining the development, testing and deployment of nuclear weapons and their delivery systems. In view of the a long history of intense rivalry between the two countries and in the absence of any mutually agreed restraints, it is difficult to imagine as to how a debilitating nuclear and missile arms race can be avoided between India and Pakistan, despite their declarations of intent to eschew a strategic arms race in South Asia.

With the recent signing of the India-US nuclear deal and the American policy of building India up as a strategic counter weight to China, size of India’s nuclear arsenal is bound to multiply. This would in all probability compel both China and Pakistan to take counter measures which would result in a build up of nuclear weapons not only in South Asia but in the wider Asian region with its negative fall out for other regional players as well.

4.1.4 A Suggested Model for Minimum Nuclear Deterrence. How to Work Out the Size of a Minimum Deterrence Force?

Having discussed various descriptions of minimum deterrence and differing views on its nature and scope, the question as to what is really meant by minimum deterrence and how can one arrive at some rough figure to determine its size, still begs an answer. The reason for this is obvious because there is lack of clarity of the concept itself and there are real difficulties in practising the minimum deterrence strategy. For instance, it is politically correct for any country to adopt and declare a minimum nuclear deterrence policy but when it comes to operationalization of the concept various complications arise. The military planners always based their calculations on the worst case scenarios and would like to err on the side of safety and therefore, there is always a tendency to have something in access of the needs just in case some unforeseen contingency arises.
Then there is the technological imperative. The scientific community relentlessly pursues Research and Development programmes and once they achieve a breakthrough they would always press for the newly developed weapon systems to be inducted. The influence of the military industrial complex is not yet very pronounced in case of India and Pakistan since most of the entities involved in the strategic programmes are state owned in both the countries. Then there is a clash of contradictory goals and ambitions especially in case of India, which would like to project itself as a responsible and self restrained country and at the same time, harbours a strong desire to be reckoned as an important player in the global power hierarchy and a competitor to a rising China. In this kind of a situation it becomes difficult to reconcile the declarations of good faith with raw ambitions. That should explain the great diversity of views amongst Indian analysts about the size of their minimum deterrent.

Keeping these difficulties aside I would make an attempt to suggest criterion or a rough guide by which one could work out the rough size of a minimum deterrence force. This has nothing to do with the ground realities especially in South Asia where both sides have kept their options of upgrading and building up their arsenals open by declaring their respective minimum deterrents as ‘dynamic’ but an effort at explaining what it ought to be.

The rationale for this model is based on the fact that nuclear weapons have tremendous destructive power and even a single weapon can cause unacceptable damage. The second pillar of this concept is the fact that deterrence does not require killing of every living being in a city or raising to ground of every standing structure in that city. Imagine a nuclear weapon of Hiroshima size i.e. around 20 kt exploding in a mega city of 10 million inhabitants. Based on various technical characteristics of the weapon and the target area and the prevailing weather conditions, it may just kill say 50,000 to 100,000 people, but imagine the fate of remaining 9.9 million residents of that city. They would be without electricity, water, sewerage, medical facilities or even food in addition to the danger of becoming victims of the immediate as well as residual radiation, which means that these people will have to be evacuated to a safer place. One can imagine the chaos and stampede it would cause in a panic stricken populace. Then where do you find the means of transportation to move such large numbers and enough space to accommodate them. Even if these problems are overcome there would be additional problems of providing food, water and shelter to so many people and after a week or so the hygiene and sanitation would become a nightmare. The conclusion one can draw from this
discussion is that one does not really need a large number of very powerful megaton range nuclear weapons for deterrence unless the objective is total destruction or wiping off of a nation from the map of the world is the objective.

In view of the above a simple method which can lead us to some realistic figure would be to determine in general terms the ‘pain threshold’ of the opponent. This would vary with the level of development and affluence in a country and how much value it assigns to human lives. Some people argue that autocratic regimes are less concerned about the loss of lives as compared to countries ruled through democratic dispensations. This may not be entirely true in all cases. The second step is to identify the most valuable assets, the loss of which would really hurt the adversary. This could be major population centres, industrial complexes, major military bases, communication hubs or a combination of all these. These can then be prioritised and let us say that ‘x’ number of targets are selected as absolutely critical. Then is the question of determining the number of warheads and the type of delivery systems that would be required to engage each of these targets. Given the uncertainty, especially in the fog of war, of system failures and the penetrability and reach of each system and the overall value and size of the target 2-3 warheads may be assigned to each with a variety of delivery means to optimise the chances of the weapons reaching their intended targets. Obviously, one would not like to expend all its assets in a single strike, so there would be need to cater for some reserves. This should lead us to a rough figure but then the extraneous factors described earlier, come into play. For instance, if there is a possibility of a surprise first strike by the enemy which could take out 50% of own assets the number determined earlier would have to be doubled. Similarly, if the adversary has deployed Missile Defence Systems and effective air defences capable of intercepting 50% of incoming missiles/aircraft the number would again have to be doubled. In mathematical terms it would appear to be something like the following:-

- No of targets selected = X
- No of warheads with 2 warheads/ target = X x 2
- Add 50% reserves = 2X + X = 3X
- Add 50% for system failures = 3X + 1.5X = 4.5X
- Add 50% for enemy missile defences = 4.5X + 2.25X = 6.75X
Now let us suppose that the value of ‘X’ i.e. the number of targets is 10. The number of warheads would come to 10 x 6.75 X = 67.5. This can be rounded off to 68 or 70. The actual size of the arsenal would however, depend on the number of targets actually identified as critical, the faith in the performance of one’s weapons and delivery systems and whether the objective is just to deter and not to totally devastate the opposing country. The other important factors are of course the survivability of own weapon systems in the face of a pre-emptive first strike and whether or not the other side has deployed missile defence systems. This later factor is important because it significantly increases the size of the arsenal even if 50% interception capability is assigned to the defences. As is evident from the hypothetical example the numbers jumped from 45 to 68 with 50% interception, if the defences have greater interception capability say in the 90% range or above, the size of the arsenal would be doubled to 90 or so weapons. The figures would of course vary with lesser or greater number of targets.
4.2 India-Pakistan Dialogue on Nuclear CBMs

Dialogue on nuclear CBMs between India and Pakistan has a long history. It started well before the overt nuclearisation of the two South Asian neighbours. During the period 1978 to 1987, President Zia-ul-Haq made at least six specific proposals for regional disarmament which could also serve as CBMs. These proposals were; (1) **Joint renunciation of the acquisition or manufacture of nuclear weapons-1978**; (2) **mutual inspection of each other's nuclear facilities – 1979**; (3) **simultaneous acceptance of IAEA ‘full scope safeguards’ – 1979**; (4) **simultaneous accession to the NPT – 1979**; (5) **a bilateral nuclear test ban treaty – 1987**; this particular proposal was personally conveyed by Prime Minister Junejo to Indian Prime Minister Rajiv Gandhi bilaterally and also presented by him during a speech at the UN General Assembly in September 1987; and (6) **A multilateral conference under UN auspices on nuclear non-proliferation in South Asia (1987)**. The idea of a multilateral conference was reiterated by Prime Minister Nawaz Sharif in June 1991 in a modified form, suggesting a meeting of five powers i.e. the United States, Russia, China, India and Pakistan, to discuss the nuclear issue in South Asia. The proposal was designed to address Indian reservations about any bilateral arrangement with Pakistan and its perception of a Chinese nuclear threat as well as the threat posed to the region by the presence of the nuclear-armed navies of the major powers. However, India turned down this proposal, like its predecessor as well as its follow on versions such as the 5+2 proposal which included Britain and France and the 5+2+2 proposal which brought in Germany and Japan as well, suspecting it to be some sort of a trap being laid by Pakistan at the behest of major powers.

A look at these proposals will reveal that the first one has become redundant while the second still had some relevance as a confidence building measure prior to the recent India-US nuclear deal and since India has agreed to place some of its civilian facilities under IAEA inspections regime it would therefore, not be interested in having a bilateral arrangement with Pakistan. Again with regard to the third proposal the situation is more or less similar to the second proposal. Now that US has taken upon itself to help India negotiate an India specific inspection agreement with the IAEA and has also promised to use its influence in the Nuclear

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94 Ibid. p.93.
Supplier Group to effect India specific exemptions, the bilateral context has become redundant. India has been promised the uninterrupted supply of nuclear fuel as well as nuclear power reactors as a quid pro quo for placing part of its civilian nuclear facilities under IAEA safeguards, there is no incentive for Pakistan at the moment to accept any restrictions. Moreover, Pakistan’s two functioning nuclear power plants and the one under construction are already under IAEA safeguards. The Indo-US agreement has therefore, changed the whole context of South Asian nuclear dialogue. As far as a bilateral nuclear test ban treaty is concerned, the question arises as to whether it still retains a potential as a bilateral CBM between India and Pakistan or not. After their tit-for-tat nuclear tests in May 1998, both India and Pakistan announced and are still observing unilateral moratoriums on nuclear testing. Pakistan has proposed on more than one occasion to convert the unilateral moratoria into a ‘bilateral test moratorium’ but India did not agree to the proposal. Here again India has assured the United States that it would refrain from conducting any more nuclear tests, thereby, eliminating the possibility of a bilateral agreement with Pakistan on this issue as well. The five-nation conference proposal also appears to have been overtaken by events and has lost its relevance.

Former Foreign Minister Agha Shahi, while describing the past experience with CBMs as discouraging, recognises the greater significance assumed by the CBMs in the aftermath of the nuclearisation of India and Pakistan. In Shahi’s view the present non-deployed state of nuclear weapons and delivery systems in South Asia is akin to virtual de-alert situation, which if formalised into a bilateral agreement would constitute an important CBM provided the problems related to verification of de-alert status are identified and sorted out beforehand. Such a step could well be categorised as a ‘Nuclear Risk Reduction’ measure as well.

### 4.2.1 The Nuclear Risk Reduction Measures. An Overview

The concept of nuclear risk reduction measures is relatively new to the two South Asian
nations. Such ideas could not be discussed bilaterally or at multilateral fora due to the fact that both countries had covert nuclear programs and were reluctant to acknowledge the existence of military nuclear capabilities. However, the May 1998 nuclear tests brought the respective programmes into the open, thereby removing the biggest barrier in the way of exploring of nuclear risk reduction measures. Prior to 1998 the only agreement in the nuclear realm was the 1988 Agreement on ‘Non-attack on each other’s nuclear facilities’. This agreement required an exchange of lists of respective nuclear installations on the first of January every year. The agreement has held its ground so far and even at the peak of tensions between the two countries at the beginning of January 2002 the lists were exchanged as per the practice in vogue, which is not only a good omen but also indicative of the importance which both countries attach to this agreement and the seriousness with which they follow it.

4.2.2 Pakistan’s Strategic Restraint Regime Proposal

In October 1998 during the expert level talks between India and Pakistan at Islamabad, nuclear risk reduction measures also came under discussion. During the course of the discussions Pakistan made a comprehensive proposal for a ‘Strategic Restraint Regime’ in South Asia. This proposal contained not only nuclear and missile restraint measures but suggestions about conventional balance and restraint as well, in view of the close linkage between conventional and nuclear conflict. The restraint measures covered the complete spectrum from development to testing and deployment. However, the Indian side expressed its inability to discuss it until they have carefully evaluated and analysed the proposal. Some of the ideas discussed during the Islamabad meeting were duly reflected in the Lahore MOU. Unfortunately, the dialogue process broke down after Lahore and there was no formal discussion of the Strategic Restraint Regime between the two countries until December 2004 when during the second round of experts level talks held at Islamabad, Pakistan revived the proposal aimed at achieving the triple objectives of ‘conflict resolution’, ‘nuclear and missile

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100 Based on the recollections of Brigadier Feroz Hassan Khan, former Director Arms Control & Disarmament Affairs, Strategic Plans Division, Joint Staff Headquarters, Pakistan.
restraint’ and ‘conventional balance’. The Indian side however was not inclined to discuss the proposed regime and while not rejecting it outrightly, refused to discuss it maintaining that they need time to study these proposals.

4.2.3 The Lahore MOU

The Lahore MOU listed in all eight measures for promoting a stable environment of peace and security between India and Pakistan. Out of these five measures are directly related to nuclear risk reduction while two others i.e. ‘periodic review of the implementation of existing CBMs and to set up appropriate consultative mechanisms to monitor and ensure their effective implementation’ and the ‘review of existing communication links between the two DGMOs with a view to upgrading and improving these links’ are also complimentary to the nuclear risk reduction measures. The last one pertains to agreement on ‘prevention of incidents at sea’. The five specific measures related to Nuclear Risk Reduction are:

- **The two sides shall engage in bilateral consultations on security concepts and nuclear doctrines, with a view to developing measures for confidence building in the nuclear and conventional fields, aimed at avoidance of conflict.**

- **The two sides undertake to provide each other with advance notification in respect of ballistic missile flight tests and shall conclude a bilateral agreement in this regard.**

- **The two sides are fully committed to undertaking national measures to reducing the risks of accidental or unauthorised use of nuclear weapons under their respective control. The two sides further undertake to notify each other immediately in the event of any accidental, unauthorised or unexplained incident that could create the risk of a fallout with adverse consequences for both sides, or an outbreak of a nuclear war between the two countries, as well as to adopt measures aimed at diminishing the possibility of such actions, or such incidents being misinterpreted by the other. The two sides shall identify/establish the appropriate communication mechanism for this purpose.**

- **The two sides shall continue to abide by their respective unilateral moratorium on conducting further nuclear test explosions unless either side, in exercise of its national**

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sovereignty decides that extraordinary events have jeopardised its supreme interests.

- The two sides shall engage in bilateral consultations on security, disarmament and non-proliferation issues within the context of negotiations on these issues in multilateral fora.\(^{102}\)

It also stipulated that where required the technical details to implement the above measures will be worked out by experts of the two sides in meetings to be held on mutually agreed dates, before mid 1999, with a view to reaching bilateral agreements. This anticipated meeting of experts could not take place due to the Kargil episode. As a result the agreed upon risk reduction measures could not be formalised into bilateral and binding agreements.

An interesting area however, was the ballistic missile flight-testing wherein, the two sides followed a norm with regard to pre-notification of these tests. In April 1999 when India conducted the test of an advanced version of its medium range ballistic missile 'AGNI' a notification was given to Pakistan. Similarly, when Pakistan responded to this test by testing its own medium range missiles 'Ghauri' and 'Shaheen-1', India was duly notified. Pakistan has since then notified all its missile tests to India. India on the other hand after the April 99 test discontinued notification of its missile tests probably as a reaction to the Kargil conflict and as such next six tests were not pre-notified. However, while India was in the midst of its largest troop mobilisation since 1971 War, and it conducted the maiden test of its, shorter range version of the AGNI missile with a range of 700 kilometres, in early January 2002, it did provide a prior notification to Pakistan. Similarly, at the peak of tensions during the 2002 military stand off when Pakistan conducted a series of missile tests in the last week of May that year, India was pre-notified. Since then both sides are notifying each other of their respective tests on a regular basis. Another positive aspect of this issue was that despite the absence of any formal agreement in this regard both sides were very careful in ensuring that they did not fire the missiles in each other’s direction during the test flights to avoid any possibility of a misunderstanding or misperception.\(^{103}\)

In addition to the establishment of the norm on notification two other positive developments have also taken place. Firstly, in 1999 Pakistan took a conscious decision to break the action-

\(^{102}\) The text of the ‘Lahore MOU’ can be found at http://www.indiaembassy.org/South_Asia/Pakistan/mou(lahore01211999).html. Also see Nazir Kamal and Amit Gupta op.cit.

\(^{103}\) Based on the author’s personal experience of the notification process.
reaction cycle with regard to missile testing and to conduct the tests only when dictated by the need to validate some technical parameters and not to play to the gallery by responding to each and every Indian missile test by a test of its own. Secondly, as a result of the norm on notification and the care taken by both sides to test the missiles at locations away from their common borders the missile tests by either side are now taken by the other as a routine activity of a technical nature. An interesting episode in this regard happened in March 2004 at the time of the first ever testing by Pakistan of its longest range Shaheen-2 missile. This was the first time that Pakistan carried out an over the sea missile test. On this occasion not only a prior notification was given to India, it was also asked to issue a NOTAM / NAVAREA to the international maritime and civil aviation traffic in the area since the intended impact point of the missile fell in the jurisdiction of Bombay Air Traffic Control and the request was complied with. This is by far the clearest indication as yet that when the two countries are convinced about the utility of a particular risk reduction or confidence building measure they abide by it whether or not a formal agreement exists in this regard or not. It is also an evidence of the fact that with the passage of time and as the two countries move along the learning curve a degree of maturity is setting in. At long last during the expert level talks held in New Delhi in August 2005, the existing understanding on missile test notification was codified into a formal agreement. The agreement was formally signed at Islamabad on 04 October 2005 during a meeting between the Foreign Ministers of India and Pakistan.

With regard to reduction of risks of accidental or unauthorised use of nuclear weapons, the two countries have moved to establish requisite command and control structures. Pakistan announced the establishment of a three tiered nuclear command and control structure in February 2000, with the National Command Authority (NCA), as the apex decision making body Chaired by the President with the Prime Minister as the Vice Chairman, the Foreign Minister as the Deputy Chairman and the Ministers of Defence, Interior and Finance besides the Chairman Joint Chiefs of Staff and the three services chiefs as members. The second tier comprises the secretariat of NCA called the Strategic Plans Division while the third tier consists of the Strategic Force Commands of the three services. India on its part announced the establishment of its Nuclear Command Authority in January 2003, which consists of a

104 Joint Press Statement by India and Pakistan at the Conclusion of Expert level talks in New Delhi on 06 August 05, Ministry of External Affairs India, New Delhi.
Political Committee, an Executive Committee and a tri-service strategic force command.  

On the issue of bilateral consultations on security, disarmament and non-proliferation within the context of negotiations on these issues in multilateral fora, no formal consultative mechanism has evolved so far. Here again the India-US nuclear agreement has transformed the strategic landscape and such consultations between India and Pakistan have become almost irrelevant.

4.2.4 An Overview of the Indo-Pakistan Composite Dialogue

As part of the ‘Peace and Security’ segment of the Composite Dialogue three rounds of talks on nuclear CBMs have been held between Indian and Pakistani technical experts. The next round of talks is likely to take place in the coming few months. At the end of the first round at New Delhi in June 2004, the following joint statement was issued:

- Both sides recognised that respective nuclear capabilities of the two countries are based on their national security imperatives and constitute a factor for stability.
- Both sides committed to take national measures to reduce the risk of accidental or unauthorised use of nuclear weapons under their respective controls and to adopt bilateral measures and mechanisms to prevent misunderstandings and misinterpretations.
- The existing DGMOs’ Hotline would be upgraded, dedicated and secured.
- A dedicated and secure hotline would be established between the two Foreign Secretaries to prevent misunderstandings and reduce risks relevant to nuclear issues.
- Both countries will work towards concluding a missile test pre-notification agreement.
- Each side reaffirmed its unilateral moratorium on conducting nuclear tests.
- Bilateral consultations on security & non-proliferation issues within the context of negotiations on these issues in the multilateral for a.
- Called for regular working level meetings to be held among all nuclear powers to discuss issues of common concern.
- The second round of expert level talks on nuclear CBMs was held at Islamabad in December 2004 and the following joint statement was issued at the end of this round:

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• Discussed and narrowed differences on the draft agreement on missile test pre-notification. Technical meetings between experts to be held between January and June 2005.

• As is evident from the joint statement hardly any progress was made in this round. The agreement on missile test pre-notification remained elusive and the Indian side declined to discuss the Strategic Restraint Regime proposal forwarded by Pakistan.

• The third round of expert level talks on nuclear CBMs was held at Delhi in August 2005. During this round some progress was made in the areas of missile test notification and hotlines between the Foreign Secretaries. The joint statement at the end of the talks stated:

• The two sides continued to hold wide ranging discussions on their respective security concepts & nuclear doctrines.

• Reached an understanding on the agreement on pre-notification of ballistic missile flight tests. [all the technical parameters and other details of the agreement were finalised during the meeting. However, it was signed later by the two Foreign Secretaries].

• In pursuance of the Lahore MOU of February 99, the Indian side handed over a draft on national measures to reduce the risk of accidental or unauthorised use of nuclear weapons under their respective controls.

• Emphasised the importance of early operationalisation of the hotline link between the Foreign Secretaries and agreed that hotline links would be established in September.

After the US-India nuclear deal the atmosphere has changed for the worse. There are already signs of hardening of India’s position on various issues and the fear is that the growing Indian arrogance and intransigence would make any progress in the next round of talks difficult to achieve. If that were to happen it would be an unfortunate development and might derail the whole process by not only halting any further progress but undermining the progress made so far. How adversely the nuclear deal will affect the Indo-Pakistan dialogue is however, yet to be seen.
4.3 Conclusion

During a visit to the US by the Indian Prime Minister Manmohan Singh in July 2005 an agreement was signed on civilian nuclear cooperation between India and the United States. The basis of this agreement, which aims at changing more than three decade old US non-proliferation policy, was the recognition of India by the US as a ‘responsible nuclear state’. The stated purpose of the deal is to meet India’s growing energy needs as its economy makes rapid progress and to bring India into the mainstream of the non-proliferation regime. As per the agreement the US would not only provide fuel for India’s power plants and sell nuclear technology to India, but will also urge its partners in the NSG to do the same. However, to achieve these objectives the US would have to change its domestic laws, notably the Atomic Energy Act and the 1978 Nuclear Non-proliferation Act which prohibit any sale of nuclear technology to countries which do not accept full scope IAEA safeguards and those which are involved in producing nuclear weapons. The 45 member NSG would also have to change its rules to allow such transactions. On its part India would be required to separate its military and civilian nuclear programmes in a transparent, credible and defensible manner, provide a list of civilian facilities to the IAEA and then negotiate a safeguards agreement with the IAEA for its civilian nuclear plants.

After tough negotiations and frequent shuttling between New Delhi and Washington by the Indian officials as well as Deputy Secretary of State Nicholas Burns, the chief American negotiator an agreement was reached just in time for President Bush’s visit to India in the beginning of March 2006. The differences were mainly about the US insistence on placing the Fast Breeder Reactors under the safeguards while India insisted on keeping these out. A few weeks prior to the Bush visit Dr Anil Kakodkar, Chairman of Indian Atomic Energy Commission in a newspaper interview publicly expressed his disagreement to the idea of placing Fast Breeder Reactors under safeguards stating that it will not only compromise India’s future energy security but its strategic programme as well. This was unusual for an Indian bureaucrat, who are normally kept on a tight leash by the political leadership to give went to his views in public, but more surprising was the fact that he got away with it. In hind sight it appears that this statement was carefully orchestrated to strengthen India’s negotiating position by building up public pressure to keep the breeders out. The ploy succeeded as the US negotiators in their indecent haste and eagerness to get the agreement
signed during the American President’s visit to India gave in to the Indian pressure and agreed to let the Fast breeder reactors outside the safeguards. India was also allowed to select which reactors it wanted to bring into the safeguards and which reactors it wanted to keep out.

As a result of the agreement signed at New Delhi on 2nd of March 2006, India has agreed to place 14 out of its 22 power reactors under IAEA safeguards. However, while the US State Department officials are boasting about their success in bringing 14 Indian reactors under safeguards do no mention the fact that six of these reactors are already safeguarded and as a matter of fact only eight new reactors would come under safeguards. It may however, be noted that this separation would not take effect immediately but would be completed by 2014. Secondly, the US has taken upon itself to help India negotiate a safeguards deal of its own choice with the IAEA and also to use its influence with the NSG to amend its rules to allow nuclear commerce with India. Whereas it is understandable that India insisted and was allowed to keep its military related facilities such as the two plutonium production reactors i.e. CIRUS (40 MW) and Dhruva (100 MW), the reprocessing plants, the fuel reprocessing plants and the heavy water plants besides the enrichment facilities and fast breeder reactors outside of the safeguards regime, it defies logic as to why India has been allowed to keep eight power reactors out of safeguards.

Another controversial aspect is the status of the CIRUS reactor which was provided by Canada and the US to India purely for peaceful purposes. India violated this agreement by using plutonium produced by this reactor in its 1974 nuclear test. As of now this reactor has produced about 450 kilograms of plutonium which is more than 50% of the total estimated Indian plutonium inventory of around 775 kilograms. Not only has India been allowed to keep this reactor out of safeguards but has also been allowed to use the plutonium produced by this reactor since 1960 for military purposes. Indian Prime Minister announced in the parliament on 7th of March that due to national security reasons India cannot place this reactor under safeguards, however, this plant would be shut down in 2010. By then it would already be 50 years old and due for dismantling, but it would be able to yield at least an additional 50 kilograms of plutonium working on 70% efficiency.
At the moment nuclear power contributes less than 3% of India’s power which is predominantly produced by thermal (mainly coal) 79% and hydel 20%. With the planned expansion of India’s nuclear power production capacity by 2030, the share of nuclear power will be 5-6 % of the total. This negates President Bush’s argument that through this deal India’s dependence on imported oil would be drastically reduced which would result in lower demand and ultimately lower oil prices in the international market. India’s biggest problem is its limited domestic uranium reserves which are estimated to be between 60,000 to 78,000 tons and the annual production of plutonium is 300 tons. With uranium reserves India cannot support both its expanding nuclear power programme as well as its ambitious nuclear weapons programme. However, after the deal with the US it will start getting imported fuel for its power reactors thereby, freeing its domestic uranium reserves to be fully dedicated for production of fissile material for the weapons purposes. Moreover, the fact that India has kept 8 CANDU type power reactors outside the safeguards, even if it dedicates one or two of these 220 MW reactors its fissile material production would be multiplied many times from the current production of about 36 kilograms per year. This will seriously disturb the nuclear balance in South Asia and force Pakistan to review and revise its minimum deterrence level to a higher number of weapons, thereby, starting a potentially dangerous and costly nuclear arms race in South Asia.

Pakistan, which is also deficient of fossil fuel reserves has also planned to increase its nuclear power generation capacity form the current 437 MW plus 300 MW which would become available in the next few years from the under construction Chashma-II to 8800 MW by 2020, which would mean construction of about 10-12 new nuclear power plants of 600 MW capacity. The US has made it clear that Pakistan would not be treated at par with India. Pakistan would therefore, rely on China for procuring its required power plants. More ominously Pakistan is concerned about the India-US deal which clearly violates the NPT Article-I obligations on part of the United States by indirectly helping boost India’s military nuclear capability. The second serious repercussion would be the possibility of ‘intangible transfer’ of technology, that is to say that Indian scientists working on the latest nuclear technology to be provided by the US for civilian purpose would be able to use this expertise and knowledge in the military side of the programme and may even replicate the technologies through reverse engineering for military purposes. Then the deal has set a dangerous precedent for other countries to follow. The Russians have already supplied 60 tons of LEU
for Tarapur plants to India despite the opposition by the NSG members and France has signed an agreement for cooperation in civilian nuclear technology with India. Encouraged by the deal India has even approached Australia for procurement of Uranium. All these developments may lead to the eventual dismantling of the NSG and even the NPT with very serious repercussions for the regional as well as global security.
Appendix I

Draft Report of National Security Advisory Board on Indian Nuclear Doctrine

August 17, 1999

1. Preamble
2. Objectives
3. Nuclear Forces
4. Credibility and Survivability
5. Command and Control
6. Security and Safety
7. Research and Development
8. Disarmament and Arms Control

Preamble

1.1. The use of nuclear weapons in particular as well as other weapons of mass destruction constitutes the gravest threat to humanity and to peace and stability in the international system. Unlike the other two categories of weapons of mass destruction, biological and chemical weapons which have been outlawed by international treaties, nuclear weapons remain instruments for national and collective security, the possession of which on a selective basis has been sought to be legitimised through permanent extension of the Nuclear Non-proliferation Treaty (NPT) in May 1995. Nuclear weapon states have asserted that they will continue to rely on nuclear weapons with some of them adopting policies to use them even in a non-nuclear context. These developments amount to virtual abandonment of nuclear disarmament. This is a serious setback to the struggle of the international community to abolish weapons of mass destruction.

1.2. India’s primary objective is to achieve economic, political, social, scientific and technological development within a peaceful and democratic framework. This requires an environment of durable peace and insurance against potential risks to peace and stability. It will be India’s endeavour to proceed towards this overall objective in cooperation with the
global democratic trends and to play a constructive role in advancing the international system toward a just, peaceful and equitable order.

1.3. Autonomy of decision making in the developmental process and in strategic matters is an inalienable democratic right of the Indian people. India will strenuously guard this right in a world where nuclear weapons for a select few are sought to be legitimised for an indefinite future, and where there is growing complexity and frequency in the use of force for political purposes.

1.4. India's security is an integral component of its development process. India continuously aims at promoting an ever-expanding area of peace and stability around it so that developmental priorities can be pursued without disruption.

1.5. However, the very existence of offensive doctrine pertaining to the first use of nuclear weapons and the insistence of some nuclear weapons states on the legitimacy of their use even against non-nuclear weapon countries constitute a threat to peace, stability and

1.6. This document outlines the broad principles for the development, deployment and employment of India's nuclear forces. Details of policy and strategy concerning force structures, deployment and employment of nuclear forces will flow from this framework and will be laid down separately and kept under constant review.

2. Objectives

2.1. In the absence of global nuclear disarmament India's strategic interests require effective, credible nuclear deterrence and adequate retaliatory capability should deterrence fail. This is consistent with the UN Charter, which sanctions the right of self-defence.

2.2. The requirements of deterrence should be carefully weighed in the design of Indian nuclear forces and in the strategy to provide for a level of capability consistent with maximum credibility, survivability, effectiveness, safety and security.

2.3. India shall pursue a doctrine of credible minimum nuclear deterrence. In this policy of "retaliation only", the survivability of our arsenal is critical. This is a dynamic concept related to the strategic environment, technological imperatives and the needs of national security. The actual size components, deployment and employment of nuclear forces will be decided in
the light of these factors. India's peacetime posture aims at convincing any potential aggressor that:
(a) any threat of use of nuclear weapons against India shall invoke measures to counter the threat: and
(b) any nuclear attack on India and its forces shall result in punitive retaliation with nuclear weapons to inflict damage unacceptable to the aggressor.

2.4. The fundamental purpose of Indian nuclear weapons is to deter the use and threat of use of nuclear weapons by any State or entity against India and its forces. India will not be the first to initiate a nuclear strike, but will respond with punitive retaliation should deterrence fail.

2.5. India will not resort to the use or threat of use of nuclear weapons against States which do not possess nuclear weapons, or are not aligned with nuclear weapon powers.

2.6. Deterrence requires that India maintain:
(a) Sufficient, survivable and operationally prepared nuclear forces,
(b) a robust command and control system,
(c) effective intelligence and early warning capabilities, and
(d) comprehensive planning and training for operations in line with the strategy, and
(e) the will to employ nuclear forces and weapons

2.7. Highly effective conventional military capabilities shall be maintained to raise the threshold of outbreak both of conventional military conflict as well as that of threat or use of nuclear weapons.

3. Nuclear Forces

3.1. India's nuclear forces will be effective, enduring, diverse, flexible, and responsive to the requirements in accordance with the concept of credible minimum deterrence. These forces will be based on a triad of aircraft, mobile land-based missiles and sea-based assets in keeping with the objectives outlined above.

Survivability of the forces will be enhanced by a combination of multiple redundant systems, mobility, dispersion and deception.
3.2. The doctrine envisages assured capability to shift from peacetime deployment to fully employable forces in the shortest possible time, and the ability to retaliate effectively even in a case of significant degradation by hostile strikes.

4. Credibility and Survivability

The following principles are central to India's nuclear deterrent

4.1. Credibility: Any adversary must know that India can and will retaliate with sufficient nuclear weapons to inflict destruction and punishment that the aggressor will find unacceptable if nuclear weapons are used against India and its forces.

4.2. Effectiveness: The efficacy of India's nuclear deterrent be maximised through synergy among all elements involving reliability, timeliness, accuracy and weight of the attack.

4.3 Survivability:

(i) India's nuclear forces and their command and control shall be organised for very high survivability against surprise attacks and for rapid punitive response. They shall be designed and deployed to ensure survival against a first strike and to endure repetitive attrition attempts with adequate retaliatory capabilities for a punishing strike which would be unacceptable to the aggressor.

(ii) Procedures for the continuity of nuclear command and control shall ensure a continuing capability to effectively employ nuclear weapons.

5. Command and Control

5.1. Nuclear weapons shall be tightly controlled and released for use at the highest political level. the authority to release nuclear weapons for use resides in the person of the Prime Minister of India, or the designated successor(s).

5.2. An effective and survivable command and control system with requisite flexibility and responsiveness shall be in place. An integrated operational plan, or a series of sequential plans, predicated on strategic objectives and a targeting policy shall form part of the system.

5.3. For effective employment the unity of command and control of nuclear forces including dual capable delivery systems shall be ensured.
5.4. The survivability of the nuclear arsenal and effective command, control, communications, computing, intelligence and information (C4I2) systems shall be assured.

5.5. The Indian defence forces shall be in a position to, execute operations in an NBC environment with minimal degradation;

5.6. Space based and other assets shall be created to provide early warning, communications, damage/detonation assessment.

6. Security and Safety

6.1. Security: Extraordinary precautions shall be taken to ensure that nuclear weapons, their manufacture, transportation and storage are fully guarded against possible theft, loss, sabotage, damage or unauthorised access or use.

6.2. Safety is an absolute requirement and tamper proof procedures and systems shall be instituted to ensure that unauthorised or inadvertent activation/use of nuclear weapons does not take place and risks of accident are avoided.

6.3. Disaster control: India shall develop an appropriate disaster control system capable of handling the unique requirements of potential incidents involving nuclear weapons and materials;

7. Research and Development

7.1. India should step up efforts in research and development to keep up with technological advances in this field.

7.2. While India is committed to maintain the deployment of a deterrent which is both minimum and credible, it will not accept any restraints on building its R&D capability.

8. Disarmament and Arms Control
8.1. Global, verifiable and non-discriminatory nuclear disarmament is a national security objective. India shall continue its efforts to achieve the goal of a nuclear weapon-free world at an early date.

8.2. Since no-first use of nuclear weapons is India's basic commitment, every effort shall be made to persuade other States possessing nuclear weapons to join an international treaty banning first use.

8.3. Having provided unqualified negative security assurances, India shall work for internationally binding unconditional negative security assurances by nuclear weapon states to non-nuclear weapon states.

8.4. Nuclear arms control measures shall be sought as part of national security policy to reduce potential threats and to protect our own capability and its effectiveness.

8.5. In view of the very high destructive potential of nuclear weapons, appropriate nuclear risk reduction and confidence building measures shall be sought, negotiated and instituted.

Opening Remarks by National Security Adviser Mr. Brajesh Mishra at the Release of Draft Indian Nuclear Doctrine

August 17, 1999

Ladies & Gentlemen,

I am happy to present to you the draft of the Nuclear Doctrine prepared by the National Security Board. A copy has been placed in each of the seats in the hall. We have decided to make this document public in keeping with our position in favour of greater transparency in decision-making. Please note that this is a draft proposed by the NSAB and has not yet been approved by the Government. That will have to wait until after the general elections.

As our thinking on the nuclear tests has been fairly well publicised, I do not intend to go over the ground again. Suffice it to say that this was a step necessitated by the security
environment and our need to ensure for ourselves the element of strategic autonomy in
decision making which we will need in the coming years. Our position has all along been that
global security would be enhanced by the universal elimination of all nuclear weapons, and
this remains our conviction today. Unfortunately, the indefinite extension of the Non-
Proliferation Treaty in 1995 was in the reverse direction.

Our nuclear weapons are not country-specific but, as I mentioned earlier, are aimed at
providing us the autonomy of exercising strategic choices in the best interest of our country,
without fear or coercion in a nuclearised environment. That being so, we have adopted a
policy of minimum deterrence as the basic building block of our nuclear thinking. Minimum but
credible deterrence is the watchword of our nuclear doctrine. From this, flows the decision to
adopt a no-first-use posture. We have therefore given unconditional guarantees to States that
do not have nuclear weapons, or are not aligned with nuclear weapon powers.

A cardinal principle regarding the use of nuclear weapons is that of civilian control. Only the
elected civilian leader of the country is empowered to authorise the use of nuclear weapons.
As the recent operations in Kargil have demonstrated, our system and the political leadership,
believe with great responsibility and restraint, as you would expect from the largest
democracy in the world. This sense of responsibility will also guide our actions with regard to
nuclear weapons.

With these words, I have great pleasure in releasing the document for public discussion and
debate.
The Cabinet Committee on Security Reviews Operationalization of India’s Nuclear Doctrine

The Cabinet Committee on Security (CCS) met today to review the progress in operationalizing of India’s nuclear doctrine. The Committee decided that the following information, regarding the nuclear doctrine and operational arrangements governing India’s nuclear assets, should be shared with the public.

2. India’s nuclear doctrine can be summarized as follows:

   (i) Building and maintaining a credible minimum deterrent;
   (ii) A posture of “No First Use”: nuclear weapons will only be used in retaliation against a nuclear attack on Indian territory or on Indian forces anywhere;
   (iii) Nuclear retaliation to a first strike will be massive and designed to inflict unacceptable damage.
   (iv) Nuclear retaliatory attacks can only be authorised by the civilian political leadership through the Nuclear Command Authority.
   (v) Non-use of nuclear weapons against non-nuclear weapon states;
   (vi) However, in the event of a major attack against India, or Indian forces anywhere, by biological or chemical weapons, India will retain the option of retaliating with nuclear weapons;
   (vii) A continuance of strict controls on export of nuclear and missile related materials and technologies, participation in the Fissile Material Cutoff Treaty negotiations, and continued observance of the moratorium on nuclear tests.
   (viii) Continued commitment to the goal of a nuclear weapon free world, through global, verifiable and non-discriminatory nuclear disarmament.
3. The Nuclear Command Authority comprises a Political Council and an Executive Council. The Political Council is chaired by the Prime Minister. It is the sole body which can authorize the use of nuclear weapons.

4. The Executive Council is chaired by the National Security Advisor. It provides inputs for decision making by the Nuclear Command Authority and executes the directives given to it by the Political Council.

5. The CCS reviewed the existing command and control structures, the state of readiness, the targeting strategy for a retaliatory attack, and operating procedures for various stages of alert and launch. The Committee expressed satisfaction with the overall preparedness. The CCS approved the appointment of a Commander-in-Chief, Strategic Forces Command, to manage and administer all Strategic Forces.

6. The CCS also reviewed and approved the arrangements for alternate chains of command for retaliatory nuclear strikes in all eventualities.

New Delhi
January 4, 2003

Press release
Ministry of External Affairs, New Delhi
Joint Statement, India-Pakistan Expert-Level Talks on Nuclear CBMs

20/06/2004

In accordance with the agreement between the Foreign Secretaries of India and Pakistan in February 2004, Expert Level talks on Nuclear Confidence Building Measures were held in New Delhi from 19-20 June 2004. Dr. Sheel Kant Sharma, Additional Secretary (IO), headed the Indian delegation and Mr. Tariq Osman Hyder, Additional Secretary (UN and EC) led the Pakistan side. The visiting Pakistani delegation also called on the External Affairs Minister Shri K. Natwar Singh, the National Security Advisor Shri JN Dixit and the Foreign Secretary Shri Shashank.

The talks were held in a cordial and constructive atmosphere.

Both sides:

Conscious of the need to promote a stable environment of peace and security between the two countries,

Recognizing that the nuclear capabilities of each other, which are based on their national security imperatives, constitute a factor for stability,

Committed to national measures to reduce the risks of accidental or unauthorized use of nuclear weapons under their respective controls and to adopt bilateral notification measures and mechanisms to prevent misunderstandings and misinterpretations,

Conscious of their obligation to their peoples and the international community,

Committed to work towards strategic stability,

Agreed on the following:

- The existing hotline between the DGMOs would be upgraded, dedicated and secured.
- A dedicated and secure hotline would be established between the two Foreign Secretaries, through their respective Foreign Offices to prevent misunderstandings and reduce risks relevant to nuclear issues.
- Both countries will work towards concluding an Agreement with technical parameters on pre-notification of flight testing of missiles, a draft of which was handed over by the Indian side.
- Each side reaffirmed its unilateral moratorium on conducting further nuclear test explosions unless, in exercise of national sovereignty, it decides that extraordinary events have jeopardized its supreme interests.
- Both countries would continue bilateral discussions and hold further meetings to work towards the implementation of the Lahore MoU of 1999.
- Both countries will continue to engage in bilateral consultations on security and non-proliferation issues within the context of negotiations on these issues in multilateral fora.
- Both countries called for regular working level meetings to be held among all the nuclear powers to discuss issues of common concern.
- Both sides agreed to report the progress of the talks to the respective Foreign Secretaries who would meet on 27-28 June 2004.

New Delhi
20 June 2004

Joint Statements
Ministry of External Affairs
In accordance with the agreement between the Foreign Ministers of Pakistan and India in September 2004, the second round of the Expert Level talks on Nuclear Confidence Building Measures was held in Islamabad on 14-15 December 2004. The Indian delegation was led by Ms. Meera Shankar, Additional Secretary (UN), Ministry of External Affairs. The Pakistan delegation was led by Mr. Tariq Osman Hyder, Additional Secretary (UN&EC), Ministry of Foreign Affairs. The visiting Indian delegation called on the Foreign Minister of Pakistan Mr. Khurshid M. Kasuri

2. The two sides held discussions in a cordial and constructive atmosphere, in the framework of the Lahore MoU of 1999 and the Joint Statement of 20 June 2004. Both sides reiterated their desire to keep working towards elaboration and implementation of Nuclear CBMs, within the agreed framework.

3. Detailed consultations were also held on the early operationalization of the decisions taken during the last round of Expert Level talks on Nuclear CBMs held in New Delhi on 19-20 June 2004, especially on the upgradation of the existing hotline between the DGMOs, and the establishment of a dedicated and secure hotline between the two Foreign Secretaries. These measures are, inter alia, intended to prevent misunderstanding and reduce risks relevant to nuclear issues.

4. Both side agreed the future periodic Expert Level talks on Nuclear CBMs would discuss, review and monitor the implementation of Nuclear CBMs as called for by the Lahore MoU of 1999.

5. They also agreed to report the progress made in the present round of the talks to the
respective Foreign Secretaries, who are scheduled to meet on 27-28 December 2004, and decide on the date and venue of the next Expert Level meeting on Nuclear CBMs.

Islamabad
December 15, 2004

Joint Statements
Ministry of external Affairs, New Dehli

Appendix V

Joint Press Statement

06/08/2005

The India-Pakistan Expert Level Dialogue on Nuclear Confidence Building Measures was held in New Delhi on 5-6 August 2005. The Indian delegation was led by Ms. Meera Shankar, Additional Secretary (UN), Ministry of External Affairs. The delegation of Pakistan was led by Mr. Tariq Osman Hyder, Additional Secretary (UN & EC), Ministry of Foreign Affairs. The visiting Pakistani delegation also called on the Foreign Secretary Shri Shyam Saran.

The present round of discussions is the third meeting held between India and Pakistan at the level of experts on the subject of nuclear CBMs, under the Composite Dialogue process. The two sides continued to hold wide-ranging discussions in a cordial and constructive atmosphere, including on their respective security concepts and nuclear doctrines.

The two sides reached an understanding on the proposed Agreement on Pre-Notification of Flight Testing of Ballistic Missiles. The proposed Agreement commits both sides to pre-notify in a structured format flight testing of ballistic missiles, with the objective of enhancing mutual confidence and engendering predictability and transparency of intent. The Experts have jointly recommended the agreed text of the proposed Agreement to the Foreign Secretaries of India and Pakistan for formalization.
In pursuance of the MoU of 21 February 1999 which *inter alia* provided for undertaking national measures to reduce the risks of accidental or unauthorized use of nuclear weapons under their respective control, the Indian side handed over a draft of such a proposed Agreement.

The two sides emphasized the importance of early operationalization of the hotline link proposed to be established between the Foreign Secretaries, through their respective Foreign Offices, to prevent misunderstandings and reduce risks relevant to nuclear issues. In this connection, discussions on related technical parameters were held. Details about implementation and testing schedules were exchanged. It was agreed that the hotline link will be established in September 2005.

The two sides also agreed to report the progress made in the present round of the talks to the respective Foreign Secretaries, who will decide on the date and venue of the next Expert Level meeting on Nuclear CBMs.

Islamabad

August 06, 2005
Joint Statement, India-Pakistan in Islamabad

04/10/2005

The Foreign Minister of Pakistan, Mr. Khurshid M. Kasuri and the Indian External Affairs Minister, Shri K. Natwar Singh met in Islamabad on 3 October 2005 for a review meeting on the progress of the second round of the Composite Dialogue comprising Peace & Security including CBMs; Jammu & Kashmir; Siachen; Wullar Barrage/Tulbal Navigation Project; Sir Creek; Terrorism & Drug Trafficking; Economic & Commercial Cooperation and Promotion of Friendly Exchanges in various fields. The plenary meeting of the revived Pakistan-India Joint Commission was also held in Islamabad on 04 October 2005. The meeting was convened pursuant to the decision taken by President General Pervez Musharraf and Prime Minister Dr. Manmohan Singh in their Joint Statement issued on 18 April 2005. The talks were held in a cordial and constructive atmosphere.

2. The Ministers held detailed and substantive discussions on the whole range of issues within the framework of the Composite Dialogue process and expressed satisfaction over the progress in the Composite Dialogue since their last review meeting in September, 2004. They recalled the outcome of the discussions between the President of Pakistan and Prime Minister of India reflected in the Joint Statements of 6 January 2004, 24 September 2004, 18 April 2005 and 14 September 2005. The Ministers reiterated that possible options for a peaceful, negotiated settlement of the issue of Jammu and Kashmir should be explored in a sincere, purposeful and forward-looking manner. The Ministers reaffirmed their determination not to allow terrorism to impede the peace process. They resolved to carry forward the peace process and to maintain its momentum.

3. The Ministers expressed satisfaction over developments that have taken place over the last one year, including the smooth operation of the Muzaffarbad-Srinagar bus service.

4. The two Ministers endorsed the recommendations made by the Foreign Secretaries as
reflected in the Joint Statement of the 02 September 2005. It was agreed that Expert level meetings will be held by the end of this year to finalize modalities for the meeting points of the divided families across the LoC and to initiate a truck service on Muzaffarabad-Srinagar route.

5. The two Ministers:
   a. welcomed the agreement to operationalize the Lahore-Amritsar bus service in November, 2005;
   b. agreed that a meeting of experts would be held in Islamabad on 25-26 October, 2005 to start the Nankana Sahib-Amritsar bus service at an early date;
   c. agreed that a meeting at the technical level would take place before the end of the year to discuss arrangements for operationalizing the Rawalakot-Poonch bus service as early as possible;
   d. agreed that a technical level meeting would take place before December 2005 to discuss modalities for starting truck service on Muzaffarabad-Srinagar route for trade in permitted goods; and
   e. welcomed the release of prisoners and fishermen by Pakistan and India. They agreed that the understanding reached between the Interior Secretaries on exchange of prisoners and fishermen would be implemented in letter and spirit including immediate notification of arrests by either side, consular access to all persons within three months of arrest, release of prisoners on completion of sentence and verification of national status, and early release of inadvertent crossers across the LoC. The Indian side handed over a draft of an agreement on consular access.

6. The two sides exchanged ideas on the Siachen issue and agreed to continue their discussions so as to arrive at a common understanding before commencement of the next round of the Composite Dialogue in January next year.

7. The two sides also exchanged ideas on the Sir Creek issue, taking into account the joint survey of the horizontal section of the boundary in the area. Without prejudice to each other’s position, they agreed to undertake a similar joint survey of the Sir Creek itself, and to consider options for the delimitation of their maritime boundary. They agreed that the joint survey should commence before the end of the year and its report will be considered in the next
round of the Composite Dialogue. Ideas relating to the delimitation of the maritime boundary would also be addressed in the Composite Dialogue with a view to its early resolution.

8. The two Ministers reiterated their commitment to the Iran-Pakistan-India gas pipeline project and agreed that this would contribute significantly to the prosperity and development of their countries.

9. The two Ministers also welcomed the signing of the following:
   a) Agreement on Pre-Notification of Flight Testing of Ballistic Missiles.
   b) Memorandum of Understanding (MoU) on Establishment of a Communication Link between the Pakistan Maritime Security Agency and the Indian Coast Guards.

10. The Indian side presented drafts for consideration proposing amendments to the existing agreements on visa, visits to religious shrines and new proposals for a Cultural Exchange Programme. The two sides agreed to pursue these matters under the Composite Dialogue framework.

11. The two sides reaffirmed their commitment to maintain the integrity of the Composite Dialogue.

12. The two Ministers expressed satisfaction at the revival of the Joint Commission and hoped that the Joint Commission would contribute significantly in strengthening the mutually beneficial relations and cooperation between the two countries. The two sides decided to restructure and streamline the work of the Joint Commission in the light of developments that have taken place since its last meeting in 1989.

13. In this context, the two sides had a meaningful and constructive exchange of ideas on restructuring the Joint Commission and subjects to be considered under its purview. The understandings reached would form the guidelines for the future work plan for the Joint Commission. The next meeting of the Joint Commission will be preceded by technical level working groups on Agriculture, Health, Science & Technology, Information, Education, I.T. & Telecommunication, Environment and Tourism.
14. The External Affairs Minister of India invited the Foreign Minister of Pakistan to visit India. The invitation was accepted and dates would be finalized through diplomatic channels.

15. The External Affairs Minister of India also paid courtesy calls on President General Pervez Musharraf and Prime Minister Shaukat Aziz.

Islamabad
October 04, 2005

Joint Statements
Ministry of External Relations
Official Spokesperson: Good evening. As you know the talks between India and Pakistan at the Foreign Secretary level took place today and they would continue tomorrow. We are right now in the middle of the talks. Naturally, I am only going to give you a very general and broad brush idea of how the talks are going and the issues that are being discussed. We will have a fuller briefing tomorrow.

Today, the two delegations met for about two-and-a-half hours followed by a working lunch. Thereafter, the Pakistan Foreign Secretary called on Minister of State for External Affairs Shri E. Ahamed. These talks will continue tomorrow morning.

Today, the two Foreign Secretaries reviewed the second round of the Composite Dialogue Process and looked forward to the third round. They made very positive assessments of the developments that have been achieved, the milestones that have been achieved in the second round of the Composite Dialogue and they both looked forward to an even more productive third round.

Amongst the positive developments, which you already know, are the overall improvement in relations between the two countries, the building up of confidence and trust and the reduction of what has been called the “trust deficit”, increased people-to-people contacts, several confidence building measures which have been put into place both in terms of connectivity as well as nuclear and conventional CBMs. These were all reviewed and looked at.
Generally, it was felt that a much larger number of people are traveling between the two countries, a much larger number of visas are being issued, people are going across for pilgrimages, greater bus and rail connectivity has been established or is to established. In this context, I should mention that India told the Pakistan side that we intend to extend the Munnabao-Khokhrapar rail link down to Ajmer. This will greatly facilitate travel of pilgrims from Pakistan to Ajmer. The Government is already in touch with the rail authorities in this regard.

The issue of release of prisoners and fishermen, the increased numbers of prisoners and fishermen to whom consular access had been granted over the last year, the numbers that had been released was much greater than 2004 - these were reviewed, outstanding figures were talked about. The schedule and dates of meetings over the next few months in terms of expert/technical-level talks as well as talks for the six remaining subjects were exchanged and discussed. We will get a final picture on this by tomorrow.

Trade and economic relations were discussed. Positive trends in India-Pakistan trade were discerned and noted. In terms of the CBMs, of course, the ones that I have already told you like Amritsar-Nankana Sahib bus, the Amritsar-Lahore bus, the Munnabao-Khokhrapar rail link, the successful implementation of the Srinagar-Muzaffarabad bus, the opening of the LoC points – these were all the matters that came up in the review as positive achievements. India’s assistance during the earthquake was greatly appreciated by the Pakistan Foreign Secretary right at the beginning of the meeting.

In terms of the nuclear CBMs, as you know, one of the successes of the second round of the Composite Dialogue was the completion of the Pre-notification of Ballistic Missiles Agreement and that was noted. In this regard it would be recalled that we had presented to Pakistan a draft for a Memorandum of Understanding on reduction of nuclear accidents or unauthorized use of nuclear weapons. They said that they were studying it but preliminary observations from the Pakistani side were handed over to us and a more detailed response or set of amendments will be given to us before the expert-level meetings later in the first half of this year.

The successful implementation of the hotline between the Foreign Secretaries was also discussed. Incidentally, it was mentioned by Pakistan’s Foreign Secretary that it was very
effectively used by us when the earthquake took place and we got through to them to check the welfare of the Indian High Commission and that was the only telephone that was working at that stage.

One of the other agreements which is already in place is the agreement to upgrade existing communication links between the DGMOs and in this regard, related military CBMs, we handed over two Non-Papers to the Pakistani side. The first one on an understanding on not to develop new posts and defence works along the LoC, and the second one regarding holding of Brigade Commander level flag meetings. They accepted the two Non-Papers and they will be studying these.

The issue of early opening of consulates in Mumbai and Karachi was also discussed as were some other outstanding issues and some possible new CBMs but on these and others I would rather wait for tomorrow to give you a more complete picture.

Civil Aviation links were discussed. As you know we already have in place an agreement in principle to increase the fights to 24 (in number) and to add more destinations – one more destination. Media products and their free movement between India and Pakistan were discussed, as were other major issues like terrorism, drug trafficking etc.

So, this is the broad brush flavor I wanted to give you of today’s meetings. I naturally cannot go into any specific details until the talks are over.

**Question:** There are reports that there are no takers for the Amritsar-Lahore bus because of some procedural problems. Has the state Government approached the MEA in this regard?

**Answer:** That is a matter that MEA has to work out with the state Government. Let us stick to India-Pakistan talks today.

**Question:** Was Jammu and Kashmir discussed during today’s talks?

**Answer:** Jammu and Kashmir will be discussed tomorrow. That is the second subject at the Foreign Secretaries’ level. As I told you yesterday, as per normal pattern the first day is a review and peace and security including CBMs. Tomorrow we do J&K.

**Question:** On terrorism any specific…
Answer: This is an overall review in terms of peace and security.

Question: Did India specifically raise the attacks in Delhi and Bangalore and the hand of Pakistan based terrorist groups?
Answer: No, there was no specific discussion of specific cases. But the overall concerns that we have on terrorism were placed on the table.

Question: On the opening of consulates, since the opening of the Pakistani consulate in Mumbai is stuck, is Delhi offering anything to facilitate that opening or is Pakistan willing to operate from a hotel?
Answer: Let me say that they discussed the difficulties that they had recently in renting a building and we offered them all our support in terms of approaching the state Government to facilitate their being able to rent appropriate premises.

Question: Siachen and Sir Creek are two issues where agreements are waiting to happen sooner than others. Any decision in this regard?
Answer: They were mentioned today in general terms but I would again wait for tomorrow to give you a more detailed assessment of where they stand. It would be premature for me to say anything on this today.

Question: What was the Pakistani stand on our proposal to extend the rail link to Ajmer?
Answer: That was appreciated. That is all within India.

Question: Will there be a Joint Statement tomorrow?
Answer: Let us wait till the end of the meeting. How do I tell you the result before the process?

Question: You mentioned about the holding of Brigade Commander Meetings, the Non-Paper. Would this be all along the LOC and would it also entail some hotlines between the Brigade Commanders?
Answer: These are initial ideas that have been conveyed from the Indian side to the Pakistani side. I think before they study it and come back with a reaction it would not be correct for me to give you details of what has been handed over.

Question: Any fresh proposals from their side?
**Answer:** They have come out with some ideas related to various nuclear CBM issues.

**Question:** They had proposed discussions on conventional CBMs. Was that part of today’s discussions?

**Answer:** Conventional CBMs were part of the discussions. They were discussed as I mentioned to you – the upgradation of the DGMO link and in terms of the two Non-Papers that I mentioned to you. These all come under the conventional CBMs.

**Question:** Any review of the October 2003 ceasefire?

**Answer:** No. It is November 2003.

**Question:** Did Balochistan find any mention in the talks?

**Answer:** Yes, Pakistan took up the issue of the statement that we had made and Foreign Secretary responded to that. In his response Foreign Secretary said that official statement had been made which spoke for itself. It had been made because a certain situation was developing in our neighborhood which was of concern to us and he rejected the unfounded allegations about India’s interference in Balochistan.

**Question:** Did they make the allegation even at the meeting?

**Answer:** Pakistan side did raise the Balochistan issue and our statement.

Thank you.

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**Press Briefings**

Ministry of External Affairs, New Delhi
Speech by Prime Minister Dr. Manmohan Singh on the launch of Amritsar – Nankana Sahib Bus Service, Amritsar

24/03/2006

Chief Minister of Punjab Sardar Amrinder Singhji,
Brothers and Sisters!

I am extremely happy to be here in Amritsar on this very important occasion of the launch of a regular bus service between Amritsar and Nankana Sahib. This is indeed a memorable day for Punjab. This is a historic day for the entire Sikh community, both in Punjab and elsewhere. This is a historic day for the Panth. In many ways, it is a historic day for both India and Pakistan.

Ever since the Independence of our country in 1947, every morning, every devout Sikh prays to let us have free access to the Gurudwaras left behind in Pakistan. And among the Gurudwaras, Nankana Sahib is the holiest and most important. Our government has made sincere efforts in this direction and this bus service between Amritsar and Nankana Sahib is a result of this.

This is an emotional day for every Sikh. And for me too. Memories of the partition of 1947 and my own travel from Pakistan to India come vividly to my mind. My heart swells with pride to launch this bus service connecting two of the holiest sites for the Sikh Panth. On this historic occasion I send my greetings to the people of Pakistan and to President Pervez Musharraf.

Brothers and Sisters,

We need more such links between the two countries in the months and years to come. For this, we require friendly relations between India and Pakistan. I hope this bus service opens yet another chapter in improving the relations between our two countries. When President Musharraf had come to visit us in New Delhi last year I had said that “The journey of peace
must be based on a step-by-step approach, but the road must be traveled.” As an ancient saying goes, a road is made by walking.

I am happy that we are moving forward and creating a road, one step after another, even though many hurdles have come up along the way. The bus service from Srinagar to Muzzafarabad was one step. The rail link from Munnabao to Khokrapar was another step. The steps we have taken to promote trade and to make travel and transport easier are all small but important steps forward. Today, we take another step. A historic step. This bus service from Amritsar to Nankana Sahib renews an emotional bond between the two sides of the border.

I have said repeatedly to President Musharraf and the people of Pakistan that we are sincerely committed to peace and development in this region. Our government is committed to resolving all outstanding issues with Pakistan, including the issue of Jammu & Kashmir. For this, I and General Musharraf have agreed that it is necessary to keep firm control over terrorism. There is a growing realization in both our countries that terrorism is an enemy of civilized societies. General Musharraf has taken bold steps to curb extremism and I compliment him for that. But more needs to be done in the interest of both India and Pakistan. As I see it, the normalization of relations between India and Pakistan will open up enormous opportunities for an accelerated rate of economic growth. And for creating new job opportunities. Our trade potential is far in excess of what we are able to realize on the ground. There are many things that the two Punjabs can learn from each other’s development experience. We must encourage people-to-people contacts between actors in civil society, between academics, businessmen, artistes, and most importantly, the common people. It is through such contacts that we can explore a vision for a cooperative common future for our two nations – a future where peace prevails, where relations are friendly, where our citizens rejoice in the well-being of the other country.

I am aware that General Musharraf has often stated that the normalization of relations between our two countries cannot move forward unless what he calls the core issue of Jammu & Kashmir is dealt with. In my view, it is a mistake to link normalization of other relations with finding a solution to Jammu & Kashmir. But we are not afraid of discussing Jammu & Kashmir or of finding, pragmatic, practical solutions to resolve this issue as well.
A step-by-step approach has to be adopted given the inherent difficulties involved in finding practical solutions. I suggest that both sides should begin a dialogue with the people in their areas of control to improve the quality of governance so as to give the people on both sides a greater chance of leading a life of dignity and self respect.

I have often said that borders cannot be redrawn but we can work towards making them irrelevant – towards making them just lines on a map. People on both sides of the LOC should be able to move more freely and trade with one another.

I also envisage a situation where the two parts of Jammu & Kashmir can, with the active encouragement of the governments of India and Pakistan, work out cooperative, consultative mechanisms so as to maximize the gains of cooperation in solving problems of social and economic development of the region.

The vision that guides us is that the destinies of our peoples are interlinked. That our two countries must therefore devise effective cooperative strategies to give concrete shape and meaning to this shared vision. India sincerely believes that a strong, stable, prosperous and moderate Pakistan is in the interest of India and entire South Asia. We are sincerely committed to the prosperity, unity, development and well-being of Pakistan. We want good neighbourly relations. We want all the people of South Asia to live a life of dignity and self-respect. When our neighbours live in peace, we live in peace.

Brothers and Sisters,

We must move forward. We want to move forward. We need to do much more to create the environment in which we can move forward. It is possible for us to come to a meaningful agreement on issues like Siachen, Sir Creek, Baglihar. I am convinced we can move forward, if all concerned are willing to accept the ground realities; if all concerned take a long view of history and of our destiny. The time has come to leave behind the animosities and the misgivings of the past and to think the unthinkable of moving together in pursuit of our common objective of getting rid of chronic poverty, ignorance and disease that still afflict millions of our citizens. India and Pakistan must work together to open up new opportunities of economic cooperation, not only with South Asia, but also with West Asia and Central Asia.
Cities like Lahore and Amritsar should once again become throbbing international commercial centers serving the entire region.

Instead of looking at each other as adversaries, we must have the courage to see each other as supporting the other for the realization of a better tomorrow for all the people of India and Pakistan. I have a vision that the peace making process must ultimately culminate in our two countries entering into a Treaty of Peace, Security and Friendship to give meaning and substance to our quest for shared goals. I make this offer to the people of Pakistan on this historic occasion. I am sure the leadership of Pakistan will reciprocate.

Brothers and Sisters,
Today is a day of hope for Punjab. Punjab has seen many years of great pain and sorrow. Punjab has seen many years of waste and violence. But the past is behind us. This Golden Land of ours is once again bounteous and filled with joy. Our government in Delhi and in Punjab have been working tirelessly for the development of the state.

I am delighted to inform you that during the recent past after my last visit our Government has taken several steps to restore the glory of Amritsar. We have sanctioned Rs. 72 crore to complete the Galiara Project around Sri Harmandir Sahib. We have established a Centre of Research on Sri Guru Granth Sahib Studies in the Guru Nanak Dev University. We have allocated Rs. 48 crore for the completion of the Khalsa Heritage Project at Anandpur Sahib. I believe the first phase of it will be inaugurated next month.

I am happy to announce that we are taking further steps for the development of Amritsar. This is a holy city. A historic city with a great past. An international city whose people reside in all corners of the world. Both Amritsar and Ludhiana are covered under the new Jawaharlal Nehru National Urban Renewal Mission. Through this, we can fund the Sri Guru Ram Das Urban Development Project in Amritsar costing nearly Rs. 240 crore and an elevated road project costing Rs. 210 crore. The state government should pursue these on priority. The Amritsar-Wagah Road will be widened and made into a top class road so that it can become an international highway for trade, travel and tourism. We are taking steps for the upgradation of facilities at Attari Railway Station, being a major International Railway Station of the country. I am also happy that the state government has finalized the development of a Special Economic Zone in Amritsar. This city and its neighborhood had a great industrial past. We need to revive it and the SEZ is one such step.
I am also concerned about the problems being faced by industry which had come up in Goindwal Industrial Complex. I am confident that the Punjab Government will look into all the issues and come up with a package for its revival. I assure all necessary support from the Government of India in this regard.

I am also proud to announce that we have decided to hand over the historic Gobindgarh fort to the Punjab Government. A historic fort that has been so dear to the Punjabis is now once again their own.

Brothers and Sisters,
Our Government has taken many steps for the development of Punjab. We have provided in the Union Budget a sum of Rs. 100 crore to the Punjab Agricultural University. This university must utilize these funds to generate a Second Green Revolution in Punjab. The hard working farmers of this lovely state feed the nation and made us secure as far as food is concerned. They created the first green revolution. We now need to move forward and transform the agriculture to the next level. As I travel across the country, I see states like Maharashtra, Andhra Pradesh, Karnataka and Tamil Nadu increasingly going for commercial agriculture centered around horticulture. Punjab farmers need to do the same if they are to keep ahead of the rest of the country. We will work with the state government to realize this goal by establishing the necessary marketing and storage infrastructure and transport facilities. The high speed rail freight corridor connecting our Western and Eastern ports has been extended to Punjab to enable easy transport of goods. We are also working towards creating a second international airport in Punjab near Ludhiana and I hope this materializes in the coming months.

Brothers and sisters,

Punjab has had a glorious history of industrial growth. Each town and city has been renowned for specific industrial products – bicycles, hosiery, machine tools, sports goods, etc. Over the last two decades, however, Punjab has lost its leadership role in many areas. We need a new wave of industrialization in the state. We need large industries which will generate demand for ancillary products. We need to provide technology and marketing support to small industries.
We need to create a skilled pool of people who can drive this growth. We need to have better roads, transport facilities and power supply.

Steps are being taken towards this end. We have allocated 1500 MWs of power to Punjab from a Super Thermal Power Station to be set up in Chhattisgarh and 1200 MWs of power from other Power Stations in the country. Power supply in and around Amritsar will improve greatly through the creation of a major new sub-station at Amritsar at a cost of Rs 150 crore. We are establishing an Indian Institute of Science Education and Research in Punjab. I have directed the National Highways Authority of India to complete at an early date the 4-laning of widening of the following roads:

- Amritsar-Jalandhar Road;
- Amritsar-Pathankot Road;
- Kiratpur-Chandigarh Road;
- Ambala-Chandigarh Road;

and also take up early the 6-laning of Ambala-Jalandhar Road and Ludhiana-Chandigarh Road.

Our Government has also decided to develop on-port and off-port facilities at Wagah International Border. This includes reducing waiting time for immigration and custom formalities at Wagah. We will modernize customs infrastructure at Wagah and speed up security clearance. We propose to expand immigration, customs and security halls and increase number of counters, and provide better amenities. We will make it easier for the arrival and departure of jathas and delegations. An animal quarantine station will be set up for exporters of live stock. We will improve facilities for the Amritsar-Lahore buses. We are also improving the infrastructure for the Beating Retreat ceremony at Wagah border post.

Brothers and sisters,

Punjab is the granary of India. Every farmer in Punjab is a proud soldier in our war against poverty and hunger. Your hard work has made India proud and prosperous. Your courage and enterprise makes each one of us proud. As a son of Punjab I salute every son and daughter of this great land. May your path be blessed.

Jai Hind.
Amritsar
March 24, 2006

Speeches
Ministry of External Affairs, New Delhi
As the IAEA documents indicate, there are 441 currently operating nuclear power reactors in the world centered in the developed countries which has more than 50% from nuclear power reactors (146 reactors in the Western Europe and 118 reactors in the North America with 104 reactors in United States alone). The developing countries have only 10% of nuclear power reactors. There are also 29 nuclear power reactors under construction in the world with capacity 21.9 GW(e) centered in developing countries in Far East and south Asia. Eighteen of the 29 new reactors under construction (59%), and 11.1 GW(e) out of 21.8 GW(e) (51%), are in developing countries. The most nuclear power reactors under construction are in China, Russia and India\footnote{More details see IAEA Nuclear power newsletter, Vol. 3 , No. 3 Special issue. Sept. 2006. p.6}. As we see, no one Arab countries currently feature on the International Atomic Energy Agency’s (IAEA) list of the 31 countries with a nuclear power plants, which together have 441 working nuclear power stations and 29 under construction.

2007 was a year of rising expectations for nuclear power in general, partly because of the potential expansion in developing countries due to their continuing need for substantially increased energy supplies, and partly because of concerns about greenhouse gas (GHG) emissions from fossil fired electricity generation, particularly coal. It has to be recognized that one of the reasons for nations pursuing the nuclear electricity generating option is their desire for a relatively high degree of energy independence. The several countries currently without nuclear power programs, affirmed that nuclear power can make a major contribution to meeting energy needs and sustaining the world’s development in the 21st century. The International Energy Agency (IEA) currently estimates that about 1.6 billion people, mostly in developing countries, do not have access to electricity, and that the number will drop only
modestly, to 1.4 billion by 2030. It shows the current disparity in electricity use per capita for selected countries and regions. Values are generally highest for the Nordic countries, which have abundant hydroelectricity and long cold dark winters; for the small oil-rich countries; and for the geographically big OECD countries (Australia, Canada and USA). The lowest values are for countries in Africa, which had an overall average consumption of 593 kWh/capita in 2003. The African average is only 22% (one fifth) of the world average and 7% (one-fifteenth) of the OECD average.

Seawater desalination is the important non-electric applications of nuclear power. Recent statistics shown that 2.3 billion people live in water-stressed areas and among them, 1.7 billion live in water-scarce areas, where the water availability per person is less than 1000m$^3$/year. The situation is going to worsen further, statistics show that by 2025 the number of people suffering from water stress or scarcity could swell to 3.5 billion and 2.4 billion of them are expected to live in water-scarce regions. Water-scarcity is a global issue, and every year new countries are affected by growing water problems Therefore, the Millennium Declaration by UN General Assembly in 2000 set up a target to halve, by the year 2015, the world population who are unable to reach, or to afford safe drinking water$^{108}$. Better water management and water reclamation are part of solution. So too are new sources of fresh water, including the desalination of seawater. Desalination technologies have been well established since the mid-20th century and widely deployed in the Middle East and North Africa. There is a big shortage in water resources so the most of the Arab countries depend on desalination by stations powered with oil or gas.

With the new millennium, The Middle East (ME) region also witnessed spread of nuclear programs. Iran became the first declared state in the region acquired completed nuclear fuel cycle. It has the technologies for enrichment of uranium and also has the first nuclear power reactor (1000MW) under construction in the region. On the other hand, other states (such as Israel, Turkey) were planning to establish nuclear power reactors or announced to study all options to produce energy.

In this respect, many of the proposals and initiatives are proposed concerning with the nuclear materials supply mechanism and nuclear fuel cycle. A suggestion (by Dr. Mohamed ElBaradei, IAEA General Director) has recently been made for Multilateral Nuclear Approaches (MNAs) to sensitive phases of nuclear fuel cycle perhaps in a limited number of regional centers\textsuperscript{109}. In this perspective, He proposed in 2003 to revisit the concept of MNAs that was intensively discussed several decades ago. Nonetheless, MNAs have failed so far to materialise outside Europe due to different political and economic perceptions.

The study undertaken by an expert group at the IAEA on the multilateral approaches to the nuclear fuel cycle issued on 22 February 2005 focused on a number of aspects of the nuclear fuel cycle, the so-called sensitive technology.\textsuperscript{110} As a framework, the following types have been considered:

Type I: Assurances of services not involving ownership of facilities:
   a) Suppliers provide additional assurances of supply.
   b) International consortium of governments.
   c) IAEA-related arrangements.

Type II: Conversion of existing national facilities to multinational facilities.

Type III: Construction of new joint facilities.

The group study concluded that the objective of increasing non-proliferation assurances concerning the civilian nuclear fuel cycles, while preserving assurances of supply and services around the world, could be achieved through a set of gradually introduced MNAs\textsuperscript{111}

Establishment of an International Nuclear Consortium (INC) [named simple Consortium] in the Middle East for multilateral enrichment R&D activities under IAEA supervision and with a number of players in relation to both the provisions of the nuclear fuel cycle and regional recipients of these services was proposed by some institutes. This proposal based on the study undertaken by IAEA on the multilateral approaches to the nuclear fuel cycle.

\textsuperscript{109} Mohamed ElBaradei, A Race We Can Win. IAEA Bulletin Vol. 46, No. 2 Op.cit, p 34
\textsuperscript{110} IAEA Doc. INFCIRC/640, 22 February 2005.
\textsuperscript{111} Ibid.
5.1 The Nuclear energy developments in the world and also in the Arab world

As this study mentioned before, the year 2007 was a year of rising expectations for nuclear power in the world because of the potential expansion in developing countries due to their continuing need for substantially increased energy supplies. Seawater desalination also is the important non–electric applications of nuclear power. Desalination technologies have been well established since the mid-20th century and widely deployed in the Middle East and North Africa. There is a big shortage in water resources so the most of the Arab countries depend on desalination by stations powered with oil or gas. In 1990s, the IAEA and North Africa states studied the feasibility of use of nuclear power in desalination. It concluded that it will be feasible, economically and technically, for these state to use nuclear power in desalination.

In the light of these important varieties on the international, regional and national levels, it will be important for the Arab countries to recalculate its situation according to the new data. The central motivating factor is growing energy needs to meeting the economic aspirations and advancing sustainable development. Limited domestic energy resources were an important factor in the decisions by Arab countries to use nuclear power. Arab countries also attracted by this new world drive towards new sources of energy. The Arab Nations would certainly not like to see themselves left behind trying to catch up too late. It will be worth to mention that all Arab countries are parties to the NPT and applied full scope safeguards of the International Atomic Energy Agency (IAEA). The Middle East region also witnessed spread of nuclear programs.

Future decisions on investing in nuclear power in Arabic countries are likely to turn much more on economics, specifically comparative generating costs, than they did in the past. Nuclear power plant designs generally benefit from economies of scale: as the technology has developed over the years. The high capital costs and low operating costs of nuclear power plants also make them attractive for baseload power. Thus economic considerations are most favorable for nuclear power in markets that can use large units for continuous baseload generation, and in areas with high demand densities and large electricity grid
infrastructures. The study will deal, in brief, with the nuclear energy developments in the Arab countries.

5.1.1 Egypt

Egypt was the first Arabic country established institutional framework to peaceful uses of nuclear energy. The Egyptian Atomic Energy Committee was established in 1955 transformed to Establishment in 1957 under the President and the first research reactor (ETRR-1) was commissioned in 1961. Egypt also worked to introduce the first nuclear power program in 1964 which terminated due to 1967 war. At present, highly qualified academic scientists in various fields of nuclear science and engineering, supported by technical staff, constitute the driving force for research and development activities in the nuclear field. The Egyptian Atomic Energy Authority (AEA) is organized into four research centers: the Nuclear Research Center (NRC), the Hot Laboratories and Waste Management Center (HLWMC), the National Center for Radiation Research and Technology (NCRRT), and the National Center for Nuclear Safety and Radiation Control (NCNSRC). Tow addition nuclear Authorities were established in 1976 and 1977 to mange nuclear power plant and the nuclear materials. The nuclear power program in 1981-1986 was frozen in the aftermath of Chernobyl accident in 1986. In 1998, Egyptian 2nd reactor ET-RR-2 was commissioned.

Egypt also adopted a disarmament and non proliferation diplomacy since early sixties regionally and internationally. She participated since 1961 in the international efforts to conclude NPT. She also participated effectively in the efforts to denuclearize Africa since 1961 and the Middle East since 1974 and establishing a Middle East Weapons of Mass Destruction Free Zone (WMDFZ-ME) since 1990. The Egyptian diplomacy has persistently demanded that Israel should accede to the NPT and put its nuclear facilities under the International Atomic Energy Agency (IAEA) full scope safeguards system. Egypt adopted a technological program for peaceful uses of nuclear energy.

Many reasons for revive study Nuclear alternative for energy resources in Egypt as following:

112 For a detailed account of the activities and organization of the AEA, see, Highlights of the Egyptian Atomic Energy Authority Activities. Cairo: Atomic Energy Authority Activity, 1996.
113 For more details see, Al-Shura Council's Report of Egypt's Nuclear Program Cairo: Al-Shura Council, 1987. (in Arabic)
1. Egyptian economy growth rate is more than 7% in the last two years and of course that is mean more demands on the energy. The production of the electricity is raising from 18 Billion KW/H in the beginning of the 1980s to 160 Billion KW/H in the year of 2007

2. Although the natural gas production increased from 1, 9 million tons in 1981 to 41, 3 million tons in 2007, Egypt consumes 60% of natural gas production for generation of electricity.

3. The high economic cost for depending on the uses of oil and natural gas in generation of electricity. The year 2005/2006, Egypt consumed 17.3 million tons of oil and 541 billion cubic feet of natural gas. If Egypt were to invest in a nuclear power plant of a capacity of 1000 megawatts, this would save 1.78 million tons of oil or 69.9 billion cubic feet of natural gas per year. In a period of 60 years, which is the average life span of a nuclear power plant, the saving in oil will have reached a figure of 106 million tons of oil, or 4.2 trillion cubic feet of natural gas. This would also spare Egypt the equivalent of 210 million tons of carbon dioxide114.

4. Fossil fuelled power plants produced 94.2 % of total Egyptian electricity production.

5. The volume of subsidy for oil materials reached 43.8 Billion Egyptian Pounds in 2006

6. Only 12 percent of electricity is generated by hydro power which arrived to the maximum use.

7. Wind energy generates only 1 percent of the electric power. At the time being, power is of the capacity of 230 megawatts. Next year it is expected to reach 430 megawatts. In 2010 it is expected to generate three percent of the total electric power. As to solar energy, Egypt is about to establish its first solar energy plant of 150 megawatts. Recently, Egypt signed an agreement with Germany to establish the first solar energy plant in the Middle East at all. Egypt will be the fourth country in the world introduces this kind of energy.

8. The reserves in oil and gas are expected to be exhausted in 15 and 34 years respectively. New discoveries in both sources of energy could extend the duration for a few extra years.\textsuperscript{115}

9. The consumption rate for the electricity is rising annually and the average energy demand on electricity in the last ten years was seven percent yearly. Last year’s demands increased by 10.2 percent. During 2006 the total demand of electric power was 18,160 megawatts, out of the total capacity to generate electricity of 21,300 megawatts.\textsuperscript{116}

10. After the price of oil become higher than 95$ per barrel comparative with 13$ in the 1981, other alternatives for energy such as nuclear energy became economically feasible.

11. Egypt also imported some oil materials with 4,1 Billion Egyptian Pounds last year(2006).

These figures should indicate the type of studies and comparative analysis that have been undertaken to find out whether it is justifiable to add nuclear power to Egypt’s energy mix. Both the Egyptian Higher Council on Energy and the ruling National Democratic Party are finalized of assessing and examining the nuclear power potential in Egypt.\textsuperscript{117}. The final decision have been made

\textit{The latest developments}

In a strategic step, President Mubarak in 29/10/2007 announced launching a program for building a number of nuclear stations for generating electricity. In his address to the nation, the President reviewed the challenges imposed by the developments on world energy market saying energy security is one of the main pillars of our national security. The President said under this decision, peaceful uses of nuclear energy will become a part of the national energy strategy and its future march. The President said, he has taken this decision out of his position as President of the Republic, in the light of the national and international challenges which are imposed by developments in the status of energy and the record increase in oil

\textsuperscript{115} Ibid, p 7
\textsuperscript{116} Ibid,p.7
prices. President Mubarak said executive steps will be taken for establishing the first nuclear power plant for generating electricity through Egyptian expertise and in cooperation with our international partners and the International Atomic Energy Agency (IAEA). The President also said, peaceful use of nuclear energy is not the monopoly of some one adding we are not starting from scratch as we have had our nuclear program in the 1950s and possess cadres and technology which qualify us for reactivating this program. The President called on the Egyptian government to double effort for increasing oil and gas reserve and output and to increase investments in renewable energy to bring its contributions to 20% of the aggregate energy uses by the year 2020. He also said increase of world oil prices will bring the volume of subsidy for oil materials to LE50 billion this year, a figure which is higher than sums spent on investments, education and health care

Nuclear energy will be to face up to Egypt’s electric needs in the future in the light of the short-life span of its oil and gas resources, as well as the limitations on its hydro power, unless in cooperation with its African neighbors riparian of the River Nile, it can double its hydro power sources.

The international community appeared a positive stance towards the Egyptian position to study all alternatives for resources of energy. The United States declared that can help Egypt in its nuclear program. France also assured the legal rights for Egypt to use nuclear energy in peaceful purposes. Russia as well as mentioned that it is ready to cooperate with Egypt in peaceful uses of nuclear energy.

Egypt has a substantial record of working on civilian nuclear technology, but recently have serious discussions begun regarding the development of a nuclear power program. Some sources indicated that Egypt has mainly been in discussion with Russia about supplying a 1,000 MWe reactor for both electricity and water desalination purposes. An additional two reactors are also included in the government’s long term plans. Although 2015 seems too soon for a plant to be online, some resources anticipate that at least one reactor with around 1,000 MWe will be operational by 2030.

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118 www.sis.gov.eg, Tuesday, October 30, 2007
120 UxC Nuclear Power Outlook, September 2007.
5.1.2 Gulf Cooperation Council (GCC) and the nuclear energy

Saudi Arabia kingdom has conducted several feasibility studies on utilizing nuclear power to desalinate sea water. However, its current involvement in an IAEA Advisory Group on Nuclear Energy for Desalination is driven by its expertise in desalination, not because of any interest in nuclear energy. The Saudis are world leader in sea water desalination as all, such facilities are powered by petroleum- and gas-generated electricity. Saudi Arabia's only known involvement in nuclear applications is limited to experiments to produce radio isotopes using the accelerator and the cyclotron. Saudi Arabia, a Party to the NPT, signed an IAEA safeguard agreement called Small Quantities Protocol, which is intended for States with little or no nuclear activity and allows the kingdom to opt out of regular intrusive inspections in exchange for a state declaration. Recently, Saudi Arabia, as the case of Oman, was visited recently by Dr Baradei to discuss its needs. If Saudi Arabia were to invest in nuclear power it might be requested at one point to negotiate a substantive international safeguards agreement with the IAEA.

Oman, it is just beginning to study desalination energy options, possibly nuclear ones. It has been recently visited by Dr Baradei during the spring of 2007. Oman, Kuwait, United Arab Emirates, Bahrain and Qatar from the GCC addition to Yemen have no nuclear infrastructure or regulatory authority other than an Atomic Energy Committee or Department.

The latest developments

The GCC summit in Riyadh in 9-10 December 2006 discussed this issue. The summit final declaration included that "the supreme council decided to start a joint study for GCC to find a joint program to uses of nuclear technologies for the peaceful uses of nuclear energy according to international norms and regimes"121. This attitude raised many questions related to its objectives and messages. Although the GCC countries are the main states in oil and gas production, nobody can deny their rights to use nuclear energy for electricity production and water desalination. Publicly, officials of the gulf council said the development of a nuclear energy program would help meet their rising demand for electricity, despite the huge oil reserves. For the GCC, there is a very important reason for going to nuclear energy that is a

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121 Hassan M. Fattah, Arab Nations Plan to Start Joint Nuclear Energy Program
storage security. The Arabic oil faced many threats. First, the oil consumption is raised. Second, the 97% of the electricity production from the oil and gas. “Nuclear technology is an important technology to have for generating power, and the Gulf States will need it equally,” said Prince Saud al-Faisal, Saudi Arabia’s foreign minister, speaking to reporters. “It is not a threat,” he said. “It is an announcement so that there will be no misinterpretation for what we are doing.”

Saudi Arabia, Oman and United Arab Emirates are involved with the IAEA in study desalination energy options, possibly nuclear one. We can say that the new drive in GCC towards the nuclear energy is based on economical justifications.

The United States supported the GCC nuclear study in the beginning, then, Secretary of State, Rice said that "she want to know more about the GCC planning to study nuclear energy programs. She also asked about the need to this energy especially for country like Saudi Arabia. The General Secretary of GCC said that "The GCC nuclear ambitious is legitimate and any body wants to see the Gulf nuclear study, it will be better after the study finish". Russia supported the Gulf nuclear program and offered its help in this program. The president Putin visited the Gulf area and declared from Saudi Arabia in 12 Feb.2007 that Russia will discuss how to help the Saudi Arabia in the potential nuclear program. Two days later, Saudi Arabia foreign minister said that his country don't see any obstacles for cooperation with Russia in developing nuclear energy program.

On the other hand, Iran welcomed with the Gulf nuclear program and considered it as a positive step in realization the legitimated interests for the region. This Iranian stance will serve its nuclear crisis with the U.S. as follow:

1- One of the most important allegations against Iran that "Iran is one of the biggest countries in the oil production, hence why it tries to invest in nuclear energy? Now, this also applying on the GCC states.

2- The GCC states also raised the environmental concerns about Iranian nuclear program to the possibilities of radiation release from its nuclear facilities. These GCC concerns will be dropped after the Gulf nuclear program.
Some sources indicated that considering the economic potential, the need for desalination, and the emphasis of these oil and gas producing nations to export their commodities, one or more nuclear plants in the region is not unlikely. It anticipates that 2 reactors with a total of 3,000 MWe operating by 2030\textsuperscript{124}.

\textit{The recent development}

The most important recent development is the declaration by Saudi Arabian Foreign Minister Prince Saud al-Faisal in first week of November 2007. He proposed to set up a body to provide the states with enriched uranium under International Atomic Energy Agency supervision\textsuperscript{125}. The specialist Middle East Economic Digest reported that the GCC had proposed to Iran the creation of a multinational consortium to provide enriched uranium to the Islamic republic as a way of resolving the standoff\textsuperscript{126}. Two days later Iran's deputy chief nuclear negotiator said Tehran welcomed proposals for joint enrichment projects with other countries, "but if the condition is stopping enrichment in Iran, it will not be acceptable".

In November, 2007 the GCC have received the preliminary copy of the draft study of their project of utilization of nuclear technology for peaceful purposes. This was disclosed by the GCC Secretary-General Abdul Rahman Al Attiyah in press statements in Riyadh following the end of OPEC summit. The draft study was prepared by the International Atomic Energy Agency. The draft study will be forwarded to the GCC leaders during their forthcoming meeting in Doha, Qatar, Al Attiyah noted, adding that the final decision about any future steps will be taken by the GCC leaders\textsuperscript{127}. The GCC summit in Doha, Qatar, in 2-3 December 2007 also discussed the study. The summit final declaration included that "the supreme council decided to complete the detailed studies in this concern\textsuperscript{128}.

\textsuperscript{124} UxC Nuclear Power Outlook, September 2007
\textsuperscript{125} EU's Solana urges nuclear enrichment centre for all. Reuters, Friday, 09 November 2007 http://www.stuff.co.nz/4267398a12.html
\textsuperscript{126} Published 2007-11-03, Last Updated 2007-11-03 13:55:17 http://www.middle-east-online.com/english/?id=22949
\textsuperscript{128} www.gcc-sg.org
In 19-21 November, 2007 the Emirates Center for Strategic Studies and Research organized a conference on "Energy Future Resources for GCC: Hydrocarbon, Nuclear or Renewable?"\(^{129}\)

UAE signed a nuclear cooperation agreement with France in 15 January, 2008. The UAE News agency mentioned that a framework for bilateral cooperation between the two countries in evaluation and availability of the peaceful use of the nuclear energy. The two countries will set up a joint committee to monitor the nuclear cooperation implementation in the uses of nuclear energy for electricity production and water desalination. Qatar also signed a nuclear agreement with France in 14 January, 2008.

### 5.1.3 Jordan

Jordan has no nuclear infrastructure or research reactor, but it discussed with China to establish Zero power research reactor.

*The latest developments*

Now, Jordan is preparing the institutional and legal framework to regulate the peaceful uses of nuclear energy. The two main laws (atomic energy law and nuclear security and safety law) were issued in 2007\(^{130}\). Jordan has recently shown interest in nuclear power reactors for generating electricity and sea water desalination. Jordan one of the Arab countries no has any significant quantities of energy sources (oil or gas). Jordanian prime minister recently declared that Jordan has a rich deposits of uranium ore and it want to use it in optimum shape. Jordan also is one of the poorest 10 countries in water resources. So, it will be feasible, economically, to use nuclear power for generating electricity and sea water desalination. A statement from the king palace stated that the king Abdullah second assured that his country will be the model in the use of nuclear technology for peaceful purposes\(^{131}\). Because of his country depends totally on the imported oil to meet its needs, the king assured that it is planning to establish a nuclear power reactor by 2015. It was also visited by the Director-General of the IAEA. The statement mentioned that Dr Baradei discussed the issue

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\(^{129}\) For more details visit : www.ecssr.ac.ae
\(^{130}\) www.aljazeera.net
\(^{131}\) www.aljazeera.net
with King Abdullah after he discussed it with Jordanian experts and he promised to send an IAEA team to Jordan to follow up the details of the project\textsuperscript{132}.

By 2015, the nation wants to complete its first nuclear power plant for electricity and desalination purposes. Considering the strong backing of the King and advanced level of implementation plans, we view a 600 MWe plant operating by 2030 as realistic\textsuperscript{133}.

5.1.4 Syria

Syrians elemental nuclear program includes a Chinese-supply small research reactor (30 kw) and plans for a larger research reactor to be sourced from Russia. In 1995, it's tries to obtain research reactor from Argentina, but it failed after U.S. practice a pressures on Argentina. In 1997, some reports mentioned that Syria discussed with Russia to get a research reactor and signed an agreement in Feb. 1998 but some reports mentioned that the U.S. stopped this deal.

\textit{The latest developments}

Syria and Russia have also concluded negotiations on the construction of a nuclear power reactor coupled with a sea water desalination plant. Syria participated in a 2002-2006 IAEA study on the economic competitiveness of nuclear desalination.

5.1.5 Libya

Libya started its nuclear activities with 10 MW research reactor at Tajoura, formally it used highly-enriched uranium 80%. The reactor was built with cooperation with former Soviet Union and that began producing isotopes in 1980s. After Libya dismantled its nuclear program in 2004, the reactor is being converted to run on LEU after Libya agreed to transfer highly-enriched uranium fuel to Russia and with cooperation with the IAEA.

\textit{The latest developments}

\textsuperscript{132} Ibid
\textsuperscript{133} UxC Nuclear Power Outlook, September 2007
Libya declared its initiative to eliminate all its programs for weapons of mass destruction in 19 December 2003. It also dismantled and turned over its enrichment equipment to the US in December 2004. As well as, it signed the Additional Protocol to its Safeguards Agreement with the IAEA in 6 March 2004. The IAEA declared that Libya is full cooperating with it. In March 2006 Libya signed an agreement with France to develop civilian nuclear power. After his visit to European countries started in 11 December 2007 with France, many reports mentioned that Libya signed a nuclear agreement with France.

5.1.6 Tunisia

The possibility of nuclear technology as an alternative energy source to its limited natural gas resources since the early 1990s has been studied in Tunisia. It conducted then a side survey and participated in an IAEA region-wide feasibility study for the use of nuclear energy for desalination in the North Africa States.

The latest developments

In 2002, Tunisia undertook a more intensive nuclear desalination feasibility study with the French Atomic Energy Commission for the Skhira site in the south of the country. The study concluded that as long as gas prices remain constant, the nuclear option would not be economical for Tunisia. Yet, it also concluded that in future the country would experience electricity shortages unless new natural gas reserves were found. Tunisia has no nuclear infrastructure other than a National Center for Science and Nuclear Technology and a National Center for Radioprotection. Tunisia as previously mentioned is the host of the Arab Atomic Energy Agency which we will come back to later.

5.1.7 Algeria

Algeria has two research reactors. First reactor is 1 MW research reactor called NOR and was built with cooperation with Argentinean and that began producing isotopes in 1989. Second reactor is a 15 MW, heavy-water Chinese research reactor at Al Oussera and called Alsalam. It was built with China since 1992 before Algeria adhered to the NPT (that happened in 1995) and went critical in 1998. Algeria also possesses a small fuel fabrication plant and rich deposits of uranium ore.
The latest developments

In January 2007, Algeria declared that it prepare for two projects to use nuclear power reactor for generating electricity coupled with a sea water desalination plant. The governor for atomic energy was said that many factors allow Algeria to be a producer for electricity from nuclear power. It has big deposits of uranium ore. In 2006, Algeria prepared the institutional and legal framework to regulate the peaceful uses of nuclear energy. The main law (atomic energy law) was drafted. Algeria has a shortage in drink water and the sea water desalination considered the only alternative to solve its water crisis especially there is an IAEA study assured the technical and economical feasibility for the sea water desalination. In the May, 2007, minister of energy declared that Algeria is planning to establish a regulatory body for nuclear safety that will be independent authority. In January 2008, Algeria and USA signed a nuclear agreement.

5.1.8 Morocco

Morocco one of the non oil Arab countries, so it is still looking for alternative energy sources especially since 1973 war after the oil price increased. The first step in that direction was the establishment of research reactor. To provide the infrastructure to help implement the program, Morocco is setting up a nuclear research center and a radiation protection authority in 1986 and signed an agreement with U.S. to build the research reactor 2 MW (Triga 2 type). As well as, Morocco had a long standing interest in nuclear power for sea water desalination.

The latest developments

In the late 1990s it carried out a feasibility study for a Chinese-built 10 MW demonstration plant at Tan-Tan with IAEA technical assistance and European Union (EU) finances. More recently, Morocco studied the economics of coupling nuclear reactors with desalination systems at Agadir and Laayoune.

5.1.9 Iraq
Iraq had dramatic experiences with regard to so called the sensitive technologies. The
UN Special Commission (UNSCOM)- IAEA campaign to disarm Iraq according to UNSCR
687 and 715 dominated the nineties (1991-1998). The UNSCOM undertook the most coerced

The conclusion of this part of the study is the Arab area witness transformation process
from the energy suppliers' area to energy consumers' area. So, it became necessary for the
Arab countries to use nuclear energy. Civilian nuclear power programs are planning in the
Arab area to meet growing demand for electricity. It is not surprising, therefore to see an
apparent interest on the part of a number of Arab nations in nuclear power, attracted by this
new drive towards new sources of energy. The Arab Nations would certainly not like to see
themselves left behind trying to catch up too late.\footnote{Mohamed I. Shaker, The Internationalization of the Nuclear Fuel Cycle. Op.cit. p8}

5.2 The economics – preferably costs and benefits for nuclear energy in the Arab
countries

It is clear that the Arabs would have the expertise, the scientists, uranium ore deposits,
research reactors, fuel fabrication skills on a small scale, accelerators and other nuclear-
related laboratories, including hot-cells laboratories, etc. In the present international context
and the policies imposed by the Nuclear Suppliers Group (NSG), the States would face
difficulties in investing, individually or collectively, in uranium enrichment, fuel reprocessing or
heavy water production, the so-called sensitive technologies.

The vehement opposition, we are witnessing against the Iranian enrichment program is
also another signal that an Arab enrichment plant would not be tolerated regardless of its
location, although enrichment is permitted under the NPT and a number of non-nuclear-
weapon States Parties to the NPT are investing in it including Germany, the Netherlands,
Brazil and more recently by Japan.
As we mentioned above, the all Arab countries need to use nuclear energy for generating electricity coupled with a sea water desalination plant, for many reason as follow:

1- Most of the Arab land is desert
2- Except Egypt, that has a percentage (12 percent) of electricity generation from hydro power, the rest of Arabs has no hydro power but depend on the oil and gas basically in electricity generation and sea water desalination.
3- The Arab should invest in nuclear energy for many reasons related to the knowledge. The nuclear knowledge is one of the important knowledge in the 21century similar to biotechnology science or computer science, So Arab should catch it.
4- Energy security become part of national security and human security as whole and every country try to guarantee energy resources for sustainable development in the country.

The comparative economics of nuclear power depend also on the economics of alternatives and thus on the economic prospects of renewable and particularly coal, oil and natural gas, which dominate current and projected electricity generation. The prices of all three energy resources have raised substantially in the last few years thus improving nuclear power’s competitiveness. The increase in oil prices is of more direct consequence for nuclear power. Oil’s share of electricity generation is big. It is somewhat higher in developing countries than for the world as a whole. However, power plants fired by natural gas and coal do compete with nuclear power, and rising global demand for gas and coal has pushed up their prices as well. In addition, the prices of gas contracts are often linked to the prices of oil and oil products. The shares of coal in electricity generation are high (38% worldwide and 45% in developing countries) and projected to be relatively stable through 2030. Natural gas, on the other hand, is rising in importance – from 17% in 2002 in developing countries to an estimated 26% in 2030, almost as high as the world average.

The nuclear energy alternative in the Arab countries has many advantages as following:

1- The nuclear power can make a major contribution to meet energy needs
2- Reliable source to generate the base load of electricity
3- Reduce the demand on oil and the changes of the oil prices
4- Desire for a relatively high degree of energy independence.
5- Diverse the energy sources
6- Reduce greenhouse gas (GHG) emissions from fossil fired electricity generation, particularly coal.

We can also conclude that the Arab countries studied the nuclear alternative and concluded that it is economically feasible. Energy security concept became known widely and also in the Arab world. The nuclear energy developments in the Arab countries are not isolated from the international and regional contexts. The nuclear infrastructures are varying in the Arab countries. The individual Arab countries’ experience in the field of peaceful uses of nuclear energy ought to be widely exchanged. The new spirit of Riyadh should encourage this to happen.

5.3 The developments of the institutional framework for Arab nuclear cooperation

As noted by the IAEA expert group on the internationalization of the nuclear fuel cycle, the rapidly growing global demand for electricity, the uncertainty of supply and price of national gas, soaring oil prices, concerns about air pollution and the immense challenge of lowering green house gas emissions which led to climatic changes, are all forcing a fresh look at nuclear power. The group goes on to note that as the technical and organization foundation of nuclear safety improves, the confidence in the safety of nuclear power plants increases. In the light of existing, new and reawakened interest in many regions of the world (including the Arab world), the prospects of new nuclear power stations on a large scale is therefore real. Some go to the extent of saying that there is a nuclear power renaissance. It also regained prominence as the civilian nuclear industry has appeared to be poised for world-wide expansion.

5.3.1 The Establishment of the Arab Atomic Energy Agency (AAEA)
In 1964, the Arab summit took a decision to establish the joined Arabic Scientific Council for the peaceful uses of atomic energy. In 1988, The Arab Atomic Energy Agency (AAEA) was established\(^{136}\).

The AAEA is a scientific organization. It is one of the Arab League subsidiary organizations but it has an independent identity. It is concerned with peaceful uses of nuclear energy, the development and technological applications.

The main roles of the organization are;
1. Coordinate among Arab States in the field of peaceful applications of the atomic energy,
2. Assist the member states in research activities,
3. Prepare and train the human resources and develop manpower for nuclear science.
4. Collect and disseminate technical and scientific information and the research conclusions in the field of nuclear science.
5. Set up unified regulations and instructions associated to the protection from ionizing radiation, nuclear safety, and safe handling of radioactive materials.
6. Coordinate scientific and technical activities with concerned regional and international organizations.
7. Support and protect the patents in the peaceful uses of atomic energy, encourage and assist Arab scientists in the field of nuclear sciences and technologies to attend relevant Arab conferences.\(^{137}\)

As mentioned above, the main objective for the AAEA is coordinating among Arab States in the field of peaceful applications of the atomic energy which include use of nuclear energy to generate the electricity and water desalination. The objective that the AAEA realized over the last period was the preparation of the human resources and developing manpower for nuclear science, but the main objective (use the nuclear energy to generate the electricity and water desalination) still on the agenda and gets a support after the last Arab summit as we mentioned later on.


\(^{137}\) Treaty of establishment the AAEA. In Arabic, ( Tunisia, AAEA, 1990) PP 5-6 and For more information see the AAEA web site (http://www.aaea.org.tr)
5.3.2 The Arab League and the IAEA

In 3 November 1971, the Arab League signed a cooperation agreement with the IAEA. The objectives of this agreement are:

1. The cooperation between the Arab League and the IAEA to attainment the objectives of both sides to increase the contribution of the peaceful uses of nuclear energy in peace, health and prosperity.
2. The reciprocal representation between the Arab League and the IAEA. The Arab League invite the IAEA representatives to attend the joined Arabic Scientific Council for the peaceful uses of atomic energy meetings without the vote and the Arab League representatives shall be invited to attend the IAEA General Conferences.
3. Exchanging of Information between the two agencies through the exchanging of publications and documents relating to scientific, technical and research activities.
4. The joint action, the Arab League and the IAEA will afford each to the other, which may be asked for the purpose of studying questions of common interest.

5.3.3 The cooperation between the IAEA and the AAEA

The Board of Governors of the IAEA on 15 June 1990 decided that the Agency should seek to conclude an agreement establishing close collaboration between the Agency and the AAEA in regard to the peaceful uses of atomic energy. The IAEA and the AAEA concluded an agreement for cooperation which entered into force on 12 November 1990. The IAEA and the AAEA agreed as follows:

Article I of the agreement included the co-operation and consultation. It started as "With a view to facilitating attainment of the objectives of the Agency as set forth in its Statute, namely to seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world, and the objectives of the AAEA, to assist the

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138 http://www.arableagueonline.org/las
advancement of Arab society by the use of atomic industry, science and research for peaceful purposes in order to raise the living standards of the peoples of the Arab States, the Agency and the AAEA agree to maintain close co-operation with regard to the peaceful uses of atomic energy and to consult regularly in regard to matters of common interest in this domain. Accordingly, when either organization proposes to initiate a program or activity for the promotion of the peaceful uses of atomic energy in which the other organization has or may have a substantial interest, it shall consult the latter organization with a view to harmonizing their efforts as far as possible, taking into account their world-wide and regional responsibilities respectively”.

Article II dealt with the reciprocal representation as the following:
1. Representatives of the Agency shall be invited to attend meetings of the AAEA and to participate without vote in their deliberations in regard to questions of a scientific or technical character.
2. Representatives of the AAEA shall be invited to attend the regular annual sessions of the General Conference of the Agency and to participate without vote in the deliberations of that body and, where appropriate, of its committees with regard to items of a scientific or technical character that are of interest to the AAEA.
3. As necessary, appropriate arrangements shall be made by agreement for the reciprocal representation of the Agency and the AAEA at other meetings convened under their respective auspices to consider scientific, technical and research matters of common interest.

Article III dealt with the Exchange of Information as the following:
1. The Agency and the AAEA agree to exchange publications and documents relating to scientific, technical and research activities of common interest, subject to any measures which may be necessary to safeguard the confidential nature of certain information and documents.
2. This exchange shall be supplemented, as necessary, by periodical contacts between members of the Secretariats of the two organizations for the purpose of consultation as regards projects or activities of common interest. In addition, each organization shall make available to the other any statistical and legislative information relating to the peaceful uses of atomic energy, in its possession on subjects of common interest.
Article IV title is a Joint Action. It stated that "The Agency and the AAEA will afford each to the other, any scientific, technical or research cooperation which may be asked for the purpose of studying questions of common interest. If any such cooperation would involve substantial expenditure, consultation will take place with a view to determining the most equitable manner of meeting such expenditure". Article V contented the implementation of the agreement as" The Director General of the Agency and the Director General of the AAEA may enter into such administrative arrangements for the implementation of this Agreement as may be found desirable in the light of the two organizations’ experience". Article VI mentioned the notification to the United Nations and filing and recording procedures. Article VII is relating to revision of the agreement by agreement between the Agency and the AAEA. Article VIII is associated to the period of the denunciation by stating that the Agency or the AAEA may denounce this Agreement by giving six months’ notice to the other. Article IX assured the entry into force upon its signature by the Director General of the Agency and the Director General of the AAEA once the statutory requirements of both organizations have been fulfilled.

5.3.4 The Arab Summit in 2007 and the Future Role of the AAEA

The Arab Summit of Riyadh in March 2007 recommended that members of the Arab League should coordinate and exchange views on Arab cooperation in the peaceful uses of nuclear energy as explained in the following two important decisions related this issue.

The First decision is emphasis on development of peaceful use of the nuclear energy. It dealt with the measures that every Arab country will be taken as individual country. The Council of the League of Arab States at Summit level decides:

1- To invite Arab countries to use or expand the use of nuclear technology for peaceful purposes in all fields of sustainable development with due consideration to the diversity of their needs and to the fact that they are strictly observing provisions of all international treaties, conventions and regulations that they have signed. To this end the following executive steps will be taken:

   a) Establishment of bodies and institutions concerned with the peaceful use of nuclear energy in each Arab country.
b) Establishment of independent national monitoring bodies to monitor the use of nuclear energy in the country as well as its imports and exports of radioactive material and equipment with the aim of ensuring nuclear safety in the country and additional transparency vis-a-vis international institutions and the international community.

c) Teaching nuclear sciences and technologies in Arab universities to develop expertise in this vital field and to request ministers of higher education to take the necessary implementation steps for that purpose.

d) Undertaking theoretical and applied research as may be required to benefit from nuclear technology in all economic, health and environmental activities, together with the necessary financing, and to request ministers of scientific research to take the necessary implementation steps for that purpose.

e) Building of research nuclear reactors which should also be used for teaching and scientific research purposes as well as economic and health activities.

f) Development and management of water resources by using nuclear technologies.

g) Cooperation among Arab countries in the production of radioactive isotopes for medical use.

h) Introduction of available nuclear technologies in the field of medicine to Arab health institutions.

i) Creation of early warning networks to monitor radioactive pollution and developing national emergency plans to deal with nuclear and radiation accidents.

j) Provide support to the Arab Atomic Energy Agency (AAEA) being the organ for joint Arab action in this field; and call upon Arab countries who did not join the Agency yet to do so without delay for their own benefit as well as that of joint Arab action in this field.

2- Request the Arab Atomic Energy Agency (AAEA) to develop an Arab strategy for the mastering of nuclear sciences and technologies for peaceful purposes till the year 2020 and submit it to the next meeting of the Ministerial Council.
3- Charge the General Secretariat, in cooperation with the Arab Atomic Energy Agency (AAEA), to take the necessary steps to implement this resolution including the convening of meetings and committees as may be necessary.

4- Request the Secretary General to follow-up the matter and submit a report thereon to the next Council meeting at Ministerial and Summit levels\textsuperscript{140}.

The second decision that the Arab Summit was taken is the decision on "Development of a Joint Arab Program for the Peaceful use of Nuclear Energy". This decision related to the joint Arab cooperation activities. The summit decided:

1- To undertake joint Arab cooperation activities for the development of peaceful use of nuclear energy and related technologies and to carry out a practical program including -inter alia - joint ventures for the development of nuclear technology applications in various developmental fields especially energy, water, medicine, agriculture and industry.

2- To request the Secretary General to form groups of experts and specialists, with the participation of the Arab Atomic Energy Agency (AAEA), to consider ways and means for such cooperation to take place within an integrated Arab framework.

3- To invite related Arab Ministerial Councils to examine the program and submit their observations thereon to the Ministerial Council of the League prior to its submission to the following Arab Summit meeting for approval\textsuperscript{141}.

The Riyadh decisions (R 383 & R 384) should read carefully. The preamble of the first decision is reaffirming that peaceful use of nuclear energy is an inherent right of the parties to the NPT and other related treaties especially the Statutes of the IAEA, recalling that all member states of the League adhered to the NPT and that they are strictly observing its provisions, a matter which qualifies them to receive necessary international support for the development of peaceful use of nuclear energy. It emphasizes the importance of applications of modern nuclear technology for peaceful purposes and of developing it further through joint Arab efforts. The preamble doesn't mention any economic justifications to use nuclear energy. The decision included more than ten measures that should be taken by the Arab states. This


is passed the intentions to the practical steps. These measures will be follow-up with the Secretary General of the League and submit a report thereon to the next council meeting at ministerial and summit levels. This means that the Arab leaders provide the political support to peaceful uses of nuclear energy and related technologies.

The objectives of the Arab joint cooperation are; firstly, distribute the cost for the Arab joint project, economically, technically and politically between the Arab countries. Secondly, distribute the expertise and exchange it between the Arab countries. The Arab countries have many factors to facilitate the peaceful uses of nuclear energy. Some of Arab countries have the money or economic capabilities to build nuclear projects; others have the human resources and expertise, or source materials for nuclear materials. This diversity of natural and human resources between the Arab countries can be helpful for the cooperation in peaceful uses of nuclear energy. The decision on "Development of Peaceful Use of Nuclear Energy in Arab Member States" provides also support to the Arab Atomic Energy Agency (AAEA) being the organ for joint Arab action in this field; and call upon Arab countries who did not join the Agency yet to do so without delay for their own benefit as well as that of joint Arab action in this field. It is worth to mention that some of Arab countries started in the implement of the first decision on "Development of Peaceful Use of Nuclear Energy in Arab Member States" that emphasis on the measures that every Arab country will be taken as individual country. Some Arabic countries which have not any institutional framework to nuclear energy studying the establishment of Atomic Energy Commission or organization and starting legislative process for National Atomic Energy Laws as a legal framework to regulate the peaceful uses of nuclear energy such as Jordan and Qatar. Other Arabic countries also decided to review its legal framework and drafting a unified nuclear law such as Egypt. The AAEA can develop its role to transfer the expertise inter the Arab member states.

In July, 2007, the AAEA held the Arab meeting to explore the ways and means to implement the Riyadh decisions on development of peaceful use of the nuclear energy and development of a Joint Arab Program for the Peaceful use of Nuclear Energy. The meeting concluded five recommendations as fellow:\textsuperscript{142}

\textsuperscript{142} http://www.aaea.org.tn/ar/news.htm
First, The legislative and regulations matters;

a) Call upon Arab countries that did not do yet, to establish the bodies and institutions concerned with the peaceful use of nuclear energy regarding its effect on development the human resources in each Arab country.

b) Call upon Arab countries that did not do yet, to issue the national atomic energy laws and nuclear safety and radiation protection acts.

c) Call upon Arab countries to establish the independent national regulatory bodies to monitor the use of nuclear energy in the country as well as ensuring nuclear safety in the country.

d) Invite Arab countries to request from the AAEA to explain all international treaties that regulate the use of nuclear technology for peaceful purposes.

Second, radiation protection

a) Establishment of early warning networks to monitor radioactive pollution and developing national emergency plans to deal with nuclear and radiation accidents

b) Establishment of centers to manage the radioactive waste.

c) Call upon Arab countries that did not do yet, to undertake the legal and technical measures to monitor the movement of unauthorized radioactive sources.

d) Study the establishment of centers to treat the exposures from radiation accidents.

Third, development of the human resources:

a) Call upon Arab universities to teach nuclear sciences in higher education programs.

b) Study the benefits from the existed nuclear engineering departments in some Arab universities.

c) Benefit from some Arabic nuclear facilities in training the Arab scientists and students and call upon the AAEA to intensify its effort in this field

d) Invite the AAEA and the authorized national bodies to intensify its effort in organizing the seminars, conferences, workshops and training courses which contribute in development of the human resources in the nuclear field

e) Call upon Arab countries to build the research nuclear reactors which be an important step on the way of acquiring the nuclear reactors technologies and build the human resources be able to operate, maintenance and monitor the safety of nuclear power plant.

f) Exchange the experts and expertise among the Arab countries
Call upon Arab countries to intensify its participations in the scientific research that coordinated by AAEA

Study the possibilities to establish a voluntary fund to support the common interest's research.

Fourth, the peaceful applications for nuclear energy and its role in the sustainable developments;

a) Use the nuclear technologies in national projects due to the economical feature for every country and its development needs such as development and management of water resources by using nuclear technologies.

b) The work towards the integration and cooperation among the Arab countries when they are planning national projects

c) Study the possibility to establish joint research facilities without repeat for national facilities.

Fifth, Electricity generation by nuclear energy

a) Call upon Arab countries to finish its study associated to energy planning and the future demands from the electric power.

b) Call upon Arab countries to adopt the nuclear energy as an alternative from the available options to secure the energy for the comprehensive economical development.

c) Study the feasibility of establishment of nuclear power reactor according to the needs and abilities to choose the suitable site.

d) Undertake the necessary steps before start building nuclear power

e) Ask the AAEA to support the Arab countries effort relating to nuclear option in electricity generation

f) Invited the Arab countries to study the possibly to integrate Arab nuclear power or build a joint nuclear power plant between two countries or more and benefit from either the existence electricity connection among many Arab states or the other that planning.

The new spirit of Riyadh should encourage the Arab nuclear cooperation to happen. The Nuclear Suppliers Group (NSG) practices and the domination of the supplier countries of
the IAEA Board may invite Arab countries to ponder on whether their AAEA could play the role of a guarantor of supply of fuel in a regional context. The AAEA will have to be restructured to play such a role\textsuperscript{143}.

Would the Riyadh Declaration in 2007 call for joint Arab action in the field of peaceful uses of nuclear energy and giving a boost to the Arab Atomic Energy Agency lead to a regional or an Arab nuclear fuel cycle, a cycle that would foster greater coordination and cooperation and at the same time ensuring regional control that could be effectively verified internationally?\textsuperscript{144}.

The most important issues related with the role of AAEA are:

1. Although many decisions have been taken by the Arab summits from the end of the fifty's from the last century, the AAEA was established in 1988 only. It took too much time to establish.
2. After two decades since the establishment of the AAEA, only twelve Arab countries (the active states), from twenty two Arab countries, are acceded to the AAEA.
3. Some of these Arab countries that not accede to the AAEA haven't nuclear infrastructure and the others haven't interested in expanding the peaceful uses of nuclear energy.
4. One of the most important issues that the AAEA was faced, in the past, is the shortages of fund because most of the Arab countries concentrated the financial resources in the economic development.
5. The role of AAEA might face the intervention between the political cooperation and scientific cooperation that led to the reflection for all political problems on the scientific cooperation.
6. There are many issues related with how the AAEA will mange the joint Arab cooperation in the field of peaceful use of nuclear energy?

Although the AAEA faced some challenges in the past as we mentioned above, there are many chances also for the AAEA. First, there is a political will from Arab Leaders to support its work according to the call of Arab Leaders at the 18th ordinary session of the Council meeting at Summit level held in the Sudan on 29/3/2006, for the development of

\textsuperscript{144}Ibid. p.19
peaceful use of nuclear energy in the Arab countries and reiterating its commitment in the leaders of the Arab States meeting at the 19th session of the Council of the League of Arab States at Summit level, in Riyadh, Capital of Saudi Arabia, on the 28th and 29th of March, 2007. Second, the 2007 Arab Summit adopted two important decisions related to nuclear issues.

The individual Arab countries’ experience in the field of peaceful uses of nuclear energy ought to be widely exchanged. The AAEA can play a key role in many areas such as legislation assistances for Arab countries in the legislative process for national atomic energy laws (NAELs). The AAEA already prepared a national atomic energy law model that can be guide for Arab countries in the legislative process for NAELs. It can provide the explanations for the international treaties and its obligations in the nuclear field. The AAEA should play a key role in any nuclear negotiations.

5.4 Analysis of an International Nuclear Consortium (INC) Proposal

As we mentioned before, there is rising expectations for nuclear power in the world. The potential spread of nuclear energy technologies raised many issues related to non proliferation concerns. Some analysts wrote that several years now, the debate on the proliferation of nuclear weapons has been dominated by individuals and countries that violate rules of good behavior - as sellers or acquirers of clandestine nuclear technology. As a result, the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT) has been declared to be "inadequate" by some, "full of loopholes" by others. They also proposed two approaches have been put forward to tighten up the NPT; both seek to ensure that the nuclear non-proliferation regime maintains its authority and credibility in the face of these very real challenges. One calls for non-nuclear weapon States to accept a partial denial of technology through a reinterpretation of the NPT's provisions governing the rights of access to nuclear technologies. The unwillingness of most non-nuclear-weapon States to accept additional restrictions under the NPT makes this approach difficult. The other approach would apply
multinational alternatives to the national operation of uranium-enrichment and plutonium-separation technologies, and to the disposal of spent nuclear fuel\textsuperscript{145}.

5.4.1 The background for multilateral approaches to the nuclear fuel cycle proposal.

A suggestion by Dr. Mohamed ElBaradei, IAEA General Director, has recently been made for multilateral approach to sensitive phases of nuclear fuel cycle perhaps in a limited number of regional centers\textsuperscript{146}. In this perspective, Dr. ElBaradei proposed in 2003 to revisit the concept of MNAs that was intensively discussed several decades ago. Several such approaches were adopted at that time in Europe, which became the true homeland of MNAs. Nonetheless, MNAs have failed so far to materialise outside Europe due to different political and economic perceptions. In June 2004, the Director General of IAEA appointed an international group of experts to consider possible multilateral approaches to the nuclear fuel cycle.

The group study concluded that the objective of increasing non-proliferation assurances concerning the civilian nuclear fuel cycles, while preserving assurances of supply and services around the world, could be achieved through a set of gradually introduced MNAs:

- Reinforcing existing commercial market mechanisms on a case-by-case basis through long-term contracts and transparent suppliers' arrangements with government backing. Examples would be: commercial fuel banks, fuel leasing and fuel take-back and commercial offers to store and dispose of spent fuel.

- Developing and implementing international supply guarantees with IAEA participation. Different models should be investigated, notably the IAEA as guarantor, e.g. as administrator of a fuel bank.

- Promoting voluntary conversion of existing facilities to MNAs, and pursuing them as confidence-building measures, with the participation of NPT non-nuclear weapon States and nuclear weapon States, and non-NPT States.

- Creating, through voluntary agreements and contracts, multinational, and in particular regional, MNAs for new facilities based on joint ownership, drawing rights or co-management.


\textsuperscript{146} Mohamed ElBaradei, A Race We Can Win. IAEA Bulletin Vol. 46, No. 2. Op.cit, p 34
for front-end and back-end nuclear facilities, such as uranium enrichment; fuel reprocessing; disposal and storage of spent fuel (and combinations thereof). Integrated nuclear power parks would also serve this objective.

-The scenario of a further expansion of nuclear energy around the world might call for the development of a nuclear fuel cycle with strong multilateral arrangements - by region or by continent - and broader cooperation involving the IAEA and the international community\textsuperscript{147}.

Among the more visible efforts in the 1970s and 1980s were: the IAEA study on Regional Nuclear Fuel Cycle Centers (1975-77); the International Nuclear Fuel Cycle Evaluation program (INFCE, 1977-80); the Expert Group on International Plutonium Storage (IPS, 1978-82); and the IAEA Committee on Assurances of Supply (CAS, 1980-87). These studies concluded that most of the proposed arrangements were technically feasible and that, based on the projections of energy demand, economies of scale rendered them economically attractive. All of these initiatives failed for a variety of political, technical and economic reasons\textsuperscript{148}. A verifiable fissile material cut-off treaty is likely to be viewed by non-nuclear weapon States as a precondition for a subsequent universal and binding acceptance of MNAs.

We can quote here from Dr. Mohamed ElBaradei "we need better control over proliferation sensitive parts of the nuclear fuel cycle: activities that involve uranium enrichment and plutonium separation. As experience has shown, effective control of nuclear materials is the "choke point" to preventing nuclear weapons development. Without question, improving control over facilities capable of producing weapon-usable material will go a long way towards establishing a better margin of security. We should be clear: there is no incompatibility between tightening controls over the nuclear fuel cycle and expanding the use of peaceful nuclear technology. In fact, by reducing the risks of proliferation, we could pave the way for more widespread use of peaceful nuclear applications"\textsuperscript{149}.

The study undertaken by an expert group at the International Atomic Energy Agency (IAEA) on the multilateral approaches to the nuclear fuel cycle issued on 22 February 2005

\textsuperscript{147} IAEA INFCIRC/640. date 22 Feb. 2005. pp. 101-104
\textsuperscript{149} IAEA Director General Dr. Mohamed ElBaradei, Treaty on the Non-Proliferation of Nuclear Weapons. 2 May 2005 | United Nations, New York, USA http://www.iaea.org/NewsCenter/Statements/2005/ebsp2005n00

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focused on a number of aspects of the nuclear fuel cycle, the so-called sensitive technology.\textsuperscript{150} As a framework, the following types have been considered:

Type I:
Assurances of services not involving ownership of facilities:
   a) Suppliers provide additional assurances of supply.
   b) International consortium of governments.
   c) IAEA-related arrangements.
Type II:
Conversion of existing national facilities to multinational facilities.
Type III:
Construction of new joint facilities.

For each of these options and for each of the technologies (enrichment, reprocessing, disposal and storage), the Group has assessed the associated pros. and cons. with respect to such factors as "non-proliferation value" (diversion of materials from declared facilities, clandestine parallel program, breakout, etc.), "assurance of supply" value (guarantees, economics, etc.), choice of host country, access to technology and degree of multilateral involvement.

While an actual (physical) bank of natural or low enriched uranium could be established, it was found impractical for technical and economic reasons to have an actual bank of nuclear fuel assemblies, given the different types of reactor designs and many variants of nuclear fuel required for them.

5.4.2 The World Nuclear Association (WNA) Report

As noted earlier, one of the instruments to enhance the security of supply of Nuclear Fuel Cycle products and services suggested in the IAEA experts’ report is reinforcement of existing market mechanisms. In this connection it looked quite logical for the World Nuclear Association (WNA) to set up, in August 2005, a dedicated working group comprising experts from the world nuclear industry. Representatives of the four leading world uranium enrichment

\textsuperscript{150} IAEA Doc. INFCIRC/640, 22 February 2005.
services suppliers were in the group: AREVA (France), TENEX (Russia), URENCO (Germany, the Netherlands and UK), and USEC (US). As a result, in May 2006, the WNA produced a report entitled “Ensuring Security of Supply in the International Nuclear Fuel Cycle” The report’s most important highlights are:

- The existing world market and the capabilities of producers assure a reliable level of supply over the entire spectrum of the NFC products and services required by the world nuclear power industry, and are the prime guarantor of supply. Therefore, questions of additional assurances may be raised not to solve supply problems, which, luckily, do not exist today, but as a safety net in case of a disruption of market mechanisms.

- Additional assurances of enrichment services can be given by enrichment companies as a collective commitment, with support from the IAEA and governments, on the basis of a three-level concept similar to the defense-in-depth concept in ensuring nuclear safety. This mechanism can be triggered only if and when a commercial supply contract is disrupted due to political reasons unrelated to non-proliferation. In any case the additional assurances must not impact negatively the existing world market.

- Introduction of additional assurances will be on the precondition that the recipient State meets all the non-proliferation requirements pre-defined and agreed upon by the parties, reinforced by intergovernmental agreements and controlled by the IAEA.\(^{151}\)

5.4.3 The recent proposals for Internationalization of Nuclear Fuel Cycle Centers (2006-2007)

In the year 2006 and 2007, many proposals concerning the nuclear fuel has been proposed. The study will outline some of these proposals.

*Global Nuclear Power Infrastructure (GNPI)*

On 25 January, 2006 Russian President Vladimir Putin announced an initiative to develop a Global Nuclear Power Infrastructure (GNPI) capable of providing secured and non-discriminatory access to the benefits of nuclear energy to all interested countries in strict compliance with non-proliferation requirements. Establishment of a network of international

\(^{151}\) see WNA website at www.world-nuclear.org/security.pdf
Nuclear Fuel Cycle Centers (INFCC), including enrichment services, under IAEA safeguards will become a key element of such an infrastructure. The GNPI-INFCC initiative is aimed primarily at countries that are developing nuclear power but not planning to establish indigenous uranium enrichment and Spent Nuclear Fuel (SNF) reprocessing capabilities.

President Putin, proposed establishment of a system of International Centers providing uranium enrichment services on a non-discriminatory basis and under control of the IAEA\textsuperscript{152}. Some Journal reports argued that Russian President Vladimir Putin raised this idea, in a bid to defuse tension over Iran's controversial nuclear program.

\textit{International Uranium Enrichment Center at Angarsk}

As a first step, Russia volunteered to initiate a joint project to establish an International Uranium Enrichment Center (IUEC) on the basis of its enrichment plant in the city of Angarsk (Irkutsk region). Interested Russian governmental and business structures have been working on the basic principles of establishing such a center. In May 2007, Russian Federation declared that it will establish an IUEC at Angarsk Electrolysis Chemical Combine" to provide guaranteed access to uranium enrichment capabilities to the Center's participating organizations"\textsuperscript{153}.

Despite the fact that work is far from complete, key principles have been formulated by some analysts such as the following:

- Equal, non-discriminatory membership for all interested countries not envisaging the development of indigenous sensitive nuclear technologies and meeting the established non-proliferation requirements;
- Transparency of commercial IUEC activities (according to international practices), its cost-effectiveness and investment attractiveness in the long term;
- IUEC enrichment capacities are to be placed under IAEA safeguards; possible involvement of the IAEA in the Center's management;
- Conclusion of an intergovernmental agreement between the interested countries (and possibly the IAEA), joint elaboration and approval of its Charter;

• Possible (vertical) integration of the enricher, LEU recipients, and suppliers of source uranium under the aegis of the IUEC;
• IUEC products, in the form of enriched uranium hexafluoride, should meet the nuclear reactor requirements of the participants;
• Foreign IUEC members will have no access to Russian uranium enrichment technology.

Through IUEC membership, countries intending to build nuclear power plants would be able to pursue their diversification policies and benefit from an additional security of LEU supply on market conditions. This is due to:
• Commitments by Russia and other participating countries resulting from the intergovernmental agreement;
• IUEC international status, involvement of the IAEA in its activities;
• Russian enrichment plant capabilities possessing proven, high-tech and competitive enrichment technology\textsuperscript{154}.

\textit{Global Nuclear Energy Partnership (GNEP)}

Global Nuclear Energy Partnership (GNEP) was proposed in Feb.2006 by USA. It aims to accelerate development and deployment of advanced fuel cycle technologies to encourage clean development and prosperity worldwide, improve the environment, and reduce the risk of nuclear proliferation. States participating in this cooperation would not give up any rights, and voluntarily engage to share the effort and gain the benefits of economical, peaceful nuclear energy\textsuperscript{155}. Under the GNEP, a consortium of nations with advanced nuclear technologies would ensure that countries who agree to forgo their own investment in enrichment and reprocessing technologies will have reliable access to nuclear fuel. In the area of non-proliferation of sensitive nuclear technologies, GNEP suggests establishing an international consortium comprised of developed countries with full NFC capabilities, including advanced nuclear technologies. The members of the consortium are assumed to become the main suppliers of uranium enrichment and SNF reprocessing services to other countries. GNEP also assumes development by NFC services suppliers of a nuclear fuel

\textsuperscript{155} http://www.gnep.energy.gov/gnepprogram.html#gnepprocess
leasing scheme with developing countries incorporating SNF return in order to discourage them from acquiring indigenous NFC capabilities.

The main objective of the US initiative, as well as of the Russian one, is to contribute to the development of a global partnership on the peaceful use of nuclear energy taking into account the global problems facing mankind156.

**Multilateralization of the nuclear fuel cycle**

In May 2007, Austria proposed a two-track multilateral mechanism. The first track would "optimize international transparency going beyond current IAEA safeguards obligations" The second track would place all nuclear fuel transactiona under auspices of a "nuclear fuel bank" to "enable equal access to and control of most sensitive nuclear technologies, particularly enrichment and reprocessing"157.

**International Enrichment Center**

In May 2007, an International Enrichment Center was proposed by Germany. The multilateral uranium enrichment center under the IAEA control will provide the enrichment services for potential users under strict supervision158.

**Enrichment Bonds**

In June 2007, the United Kingdom proposed a "bonding" principle that would, in the event that the agency determines that specified condition have been met: (1) guarantee that national enrichment provides would not be prevented from supplying enrichment services; and (2) provide prior consent for export assurances159.

**The IAEA and the recent proposals**

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156 As September 16, 2007 GNEP Partners are Australia, Bulgaria, China, France, Ghana, Hungary, Japan, Jordan, Kazakhstan, Lithuania, Poland, Romania, Russia, Slovenia, Ukraine and United States.

GNEP Observer: International Atomic Energy Agency (IAEA), Generation IV International Forum (GIF) and Euratom. Attending Candidate Partner and Observer Countries are Argentina, Belgium, Brazil, Canada, Czech, Egypt, Finland, Germany, Italy, Mexico, Morocco, Netherlands, Slovakia, Spain, South Korea, Sweden, Switzerland, Turkey and United Kingdom. Invited, Accepted But Did Not Attend: Libya, Senegal and South Africa. Total participating countries: 35 and total countries and intergov 38

http://www.gnep.energy.gov/gnepprogram.html#gnepprocess


In June 2007, Dr. ElBaradei presented a report on a multilateral framework for nuclear energy to the Agency’s Board of Governors. The report, entitled Possible New Framework for the Utilization of Nuclear Energy: Options for Assurance of Supply of Nuclear Fuel, addressed proposals put forward over the past two years by various States and institutions. Some proposals call for the creation of an actual or virtual reserve fuel bank of last resort, under IAEA auspices, for the assurance of supply of nuclear fuel. This bank would operate on the basis of a political and non-discriminatory non-proliferation criteria. Others call for conversion of a national facility into an international enrichment centre. Still others call for the construction of a new, multinational enrichment facility under IAEA control.\footnote{IAEA Chief Addresses GNEP Meeting in Vienna, Staff Report, 16 September 2007, http://www.iaea.gov/}

We can conclude that it’s obvious that all the above initiatives have common elements related to the assurance of supply. The concept of these proposals is to establish an international framework for so-called sensitive nuclear technologies. The proposals are an attempt at a systematic approach to the efforts of interested countries. All the initiatives also argued that it is aimed at the growing role of nuclear energy and strengthening the nuclear non-proliferation regime by granting countries developing nuclear power, without using so-called sensitive nuclear technologies, additional assurances of access to Nuclear Fuel Cycle products and services. All these arguments will be discussed in the following section.

\section*{5.5 Towards an International Nuclear Consortium (INC) in the Middle East: the LNCV proposal}

Establishment of an International Nuclear Consortium (INC) [named simple Consortium] in the Middle East for multilateral enrichment R&D activities under IAEA supervision and with a number of players in relation to both the provisions of the nuclear fuel cycle and regional recipients of these services was proposed by some institutes. This proposal based on some ideas that included in the study undertaken by IAEA on the multilateral approaches to the nuclear fuel cycle issued on 22 February 2005 focused on a number of methods within International consortium of governments.
5.5.1 International Nuclear Consortium (INC) in the Middle East proposal: The issues addressed, aims and elements

There are many nuclear energy developments in the Middle East. One country (Iran) has a nuclear power plant under construction and almost in the final stage. Iran continues its enrichment development program despite strong opposition from many countries and international organizations, including the IAEA Board of Governors and the UN Security Council. International opposition is based on anxiety that development of a “duel” use nuclear technology in Iran would significantly increase tension in the most unstable region of the world – the Middle East.

Iran’s main arguments for continuing their national enrichment program are:

- Iran as an NPT member state has every right to develop nuclear technology for peaceful purposes under IAEA safeguards, as many other non-weapon countries do this, like Japan, Brazil, Argentina

  It is worth to mention that, in the context of Iranian nuclear crisis, Russia proposed to enrich Iran's uranium on Russian soil. Russia’s Defense Minister Sergei Ivanov called on March 28, 2006 for Iran to say "unambiguously" whether it will accept or reject the Russian offer. But Tehran wants nuclear fuel center in Iran. The Iranian proposal made in a statement issued by the Iranian Embassy in Moscow. Tehran is calling for a nuclear fuel production center to be set up in Iran, with the involvement of other countries 161.

- International bargains, including the Russian proposal - to organize an international enrichment consortium situated in Russia – are argued by Iranian officials to be economically unattractive and do not respond to Iranian concerns regarding the security of fuel supply since Iranian nuclear power would depend too much on Russia.

At present the international community is not happy with this Iranian enrichment deadlock and is looking for an exit strategy. Iran also is looking for such a strategy with

161 Tehran Wants Nuclear Fuel Center In Iran. Tuesday, March 28, 2006
increasing economic challenges in the country due to the UN sanctions and mounting problems in the national oil extraction industry.

Is it possible to find an exit strategy that will satisfy both sides of the conflict? The strategy would address international concerns through continuation of Iran’s enrichment program at a R&D level and with assurance of supply guaranteed by the IAEA. The strategy would also address Iran’s concern to use its legitimate right to develop nuclear technology for peaceful purposes, and to develop national nuclear power in a cost effective and secure way. To find a possible solution satisfying both Iran and the international community one should first understand what a “cost-effective and secure way of producing nuclear energy” means for Iran.

On the other side, many countries in the region are planning to build nuclear plants.

5.5.2 The INC proposal and addressing economic concerns

Lessons learned in the economic area from the development of nuclear power show the following:

1. Most (some 70%) of nuclear energy cost is associated with the capital costs of nuclear power plant construction and management. Enrichment accounts for 10% of the total cost, and spent fuel management - another 10% -15%. But this low fuel cycle expenditure is valid for the commercial level of nuclear fuel cycle facilities.

2. Fuel cycle processing unit costs for enrichment, fabrication, reprocessing and disposal strongly depend on the unit capacity of the fuel cycle facilities. More or less reasonably efficient fuel cycle costs are achieved in facilities serving nuclear power plant (NPP) parks on the scale of dozens of GigaWatt (GW).

3. France, Japan and South Korea – also successful nuclear power development countries - started their national nuclear program by buying reactors and fuel cycle services and only after reaching a certain level of development achievement they start to develop domestic reactors and fuel cycle technologies on a national level.

Once established an International Nuclear Consortium (INC), if any country in the area (Iran, or any Arab country such as Algeria, Libya, GCC) wants to develop, at an industrial
scale, a national nuclear program in a cost effective way, it would be reasonable for them to start their program first with buying reactors on the global market and fuel cycle services by the INC. It would be economically reasonable for any country to aim for national advances in technology developments only after having achieved a certain level of success. Iran currently applies the external supply strategy in relation to the reactor sector, which represents the majority of its economic expenditure. It would be reasonable also to follow the same patterns in fuel cycle area, but here Iran also uses security issues and the need for a secure fuel supply even for one nuclear reactor.

5.5.3 The INC proposal: addressing the security challenges

Providing a secure supply of nuclear fuel for constructed or future NPPs is very important, but should be considered within the context of global energy security. Nevertheless any country has every right to raise concerns over the security of nuclear supply even for one reactor (such Iran), and one must also take into account its plan to build several NPPs in the future.

How can the INC addresses this security concern in an economic way that is also applicable to other countries in the Middle East (Saudi Arabia, Jordan and others from the Gulf Cooperation Council), with their plans to go for nuclear power?

It would appear that the security solution should take into consideration the following elements:

1. Decision to continue or stop providing fuel cycle services to any countries concerned should not depend primarily on the governments of those countries that already have the technology.
2. It should not disturb the existing nuclear fuel cycle services market; but at the same time it should encourage those countries that do not develop national fuel cycle capabilities by some kind of economic privileges.
3. To avoid a monopoly there should be several players, both providers of nuclear fuel cycle services and recipients of these services.
4. The possibility should be explored of establishing a Virtual Fuel Bank under the control of the IAEA as recipients of the enrichment service and as a guarantee of long-term nuclear fuel supply.

A possible solution to all the above mentioned concerns, also taking into consideration the national rights of Middle East countries to develop and use civil nuclear power in an economical and secure manner, could be the establishment of an International Nuclear Consortium in the Middle East with the participation of several present nuclear technology holders (the Russia, USA, France and other), potential nuclear power users in the Middle East (Iran, Egypt, Saudi Arabia, Jordan and others) and the IAEA.

The main mission of the proposed INC would be to facilitate nuclear power development for peaceful purposes in the Middle East with minimum risk.

The mission of the proposed INC would be realized by:

1. Assisting countries in planning, developing and building nuclear reactors for peaceful use in the Middle East
2. Providing complete fuel cycle services (delivering fresh fuel and removing spent fuel) for those countries that do not develop their own capabilities at costs lower than existing global market prices.
3. Involving the IAEA, and its mechanisms, in decision making process and in the executive body of the INC to decide if a user state is eligible or not to receive attractive fuel cycle service, and to help assure supply in case of a positive decision.
4. Achieving attractiveness of the fuel cycle service prices first by using special non-proliferation funds from nuclear fuel cycle technology holder countries and by engaging and effectively managing capitals of those Middle East countries planning nuclear power programs.

5.5.4 The elements of the INC proposal

1. Establishment of an International Nuclear Consortium (INC) [named simple Consortium] in the Middle East for multilateral enrichment R&D activities under
IAEA supervision and with a number of players in relation to both the provisions of the nuclear fuel cycle and regional recipients of these services including in particular the Islamic Republic of Iran and the GCC states [the multilateral nature of this Consortium guarantees both the commercial availability of the nuclear fuel produced and the absence of monopoly practices];

2. Exploring the possibility of developing an associated Virtual Fuel Bank under the control of the IAEA as a recipient of the enrichment service of the Consortium and as a guarantee of long-term nuclear fuel supply [this arrangement could address the security concern on the long-term provision of the nuclear fuel supply];

3. Negotiating the site of the Consortium which could be placed in a country in the region, even outside the Middle East [such negotiations should not exclude “a priori” the Islamic Republic of Iran itself as a site if Iran has complied with all outstanding verification issues of the IAEA and accepted a strict verification monitoring mechanism (including and strengthening the measures provided by the implementation of the Additional Protocol which must be ratified in the meantime). This verification mechanism could be formed by inspectors from the IAEA and from the GCC countries, modelled on and inspired by the bilateral verification mechanism existing between Argentina and Brazil, ABACC].

5.6 Analysis and evaluation of the INC proposal

A part from the crosscutting factors related to ability of the implementation of INC, such as the legal, institutional and safeguards, there are a number of overarching issues, primarily of a broad political nature, that may have a bearing on perceptions as to the feasibility and desirability of INC. The most important question related to the INC is how would INC members benefit? Some analysts argued that the member states to INC can benefit as following:

- Assured access to enrichment good and services
- Increased energy security and reliability of nuclear fuel supply
- Savings of the country’s resources due to foregoing (temporary) domestic enrichment capabilities.
• The ability to diverse the enrichment services supply

The way and means of evaluation will be on many bases (incentives and disincentives) as the following:

1- Legal aspects
2- Political aspects
3- Analysis of economic benefits
4- Assurances of supply
5- Nonproliferation,
6- Safeguards and export control.

5.6.1 Legal aspects

In the 1960s when the United States and former Soviet Union submitted the draft of non proliferation treaty (later called NPT) to the 18 members of Disarmament Committee, it was clear that the treaty prohibited Non – Nuclear Weapons States (NNWS) from acquiring nuclear weapons and also prohibited the 5 Nuclear Weapons States (NWS) from supplying them. However, it was not possible to conclude a treaty on these terms alone. So, the article IV on peaceful nuclear cooperation and article VI on disarmament the 5 nuclear weapons states were added. Only on this bargain could the NPT come into existence\textsuperscript{162}. That is mean; the NPT was based on a central bargain that in exchange for NNWS not to acquire Nuclear Weapons and the NWS agreed to share peaceful nuclear technology and to pursue nuclear weapons disarmament. It is clear that the NPT was never designed to be a discriminatory treaty permanently dividing the world into two classes of states, 5 NWS and a large number of other states (now 184 States) without Nuclear Weapons. Only, three states (Israel, India and Pakistan) still stand outside the NPT. This central bargain (nuclear non proliferation, peaceful nuclear cooperation and nuclear disarmament) for the NPT was adopted in the 1995 NPT Review and Extension Conference decisions. The conference extended the NPT indefinitely, besides "Principals and Objectives of Non Proliferation and Disarmament" decision\textsuperscript{163}. The 2000 Review Conference final declaration reaffirms the important of this central bargain with adopted the "13 steps" for Disarmament. It also reaffirms the importance of Israel's accession

\textsuperscript{162}Harald Muller, Farewell to Arms. IAEA Bulletin Vol. 46 , No. 2 March 2005. p.12

\textsuperscript{163}Reviewing the Non- Proliferation Treaty : Preparing For Future. Acronym Institute, No.11 April 1998 pp 52-54
to the NPT and placement of all of its nuclear facilities under comprehensive IAEA safeguards, realizing the goal of universal adherence to the NPT in the ME\textsuperscript{164}.

George Shultz, William Perry, Henry Kissinger and Sam Nunn wrote an very important article which appeared in the Wall Street Journal in 4 June 2007 called for re-ignite the vision of a world free of nuclear weapons and to redouble efforts on the practical measures towards it. They also called for a global effort to reduce reliance on nuclear weapons, to prevent their spread into potentially dangerous hands, and ultimately to end them as a threat to the world\textsuperscript{165}. Recently in their article in January 15, 2008, they also wrote "The accelerating spread of nuclear weapons, nuclear Know-how and nuclear material has brought us to a nuclear tipping point…….With nuclear weapons more widely available, deterrence is decreasingly effective and increasingly hazardous. The interest, momentum and growing politic space that has been created to address these issues over the past year has been extraordinary, with strong positive responses from people all over the world. Mikhail Gorbachev also wrote in 2007 that, as someone who signed the first treaties on real reductions in nuclear weapons, he thought it his duty to support our call for urgent action: "It is becoming clearer that nuclear weapons are no longer a means of achieving security; in fact, with every passing year they make our security more precarious."

In June 2007, the United Kingdom's foreign secretary, Margaret Beckett, signaled her government's support, stating: "What we need is both a vision -- a scenario for a world free of nuclear weapons -- and action -- progressive steps to reduce warhead numbers and to limit the role of nuclear weapons in security policy. These two strands are separate but they are mutually reinforcing. Both are necessary, but at the moment too weak."\textsuperscript{166}

The U.S. and Russia, which possess close to 95% of the world's nuclear warheads, have a special responsibility, obligation and experience to demonstrate leadership, but other nations must join. Some steps are already in progress, such as the ongoing reductions in the

\textsuperscript{164}Programme for Promoting Nuclear Non-Proliferation, PPNN Newsbrief, Number 51 2nd Quarter (2000).
also, Rebecca Johnson, Disarmament Diplomacy, Issue Number 46, May (2000) P. 17
\textsuperscript{165} George Shultz, William Perry, Henry Kissinger and Sam Nunn, " A World Free of Nuclear Weapons" Wall Street Journal, 4 June 2007
\textsuperscript{166} The writers mentioned that "Additional indications of general support for this project from other former U.S. officials with extensive experience as secretaries of state and defense and national security advisors. These include: Madeleine Albright, Richard V. Allen, James A. Baker III, Samuel R. Berger, Zbigniew Brzezinski, Frank Carlucci, Warren Christopher, Lawrence Eagleburger, Melvin Laird, Anthony Lake, Robert McFarlane, Robert McNamara and Colin Powell.
number of nuclear warheads deployed on long-range, or strategic, bombers and missiles. Other near-term steps that the U.S. and Russia could take, beginning in 2008, can in and of themselves dramatically reduce nuclear dangers. They include many steps such as extend key provisions of the Strategic Arms Reduction Treaty of 1991 and adopt a process for bringing the Comprehensive Test Ban Treaty (CTBT) into effect, which would strengthen the NPT and aid international monitoring of nuclear activities.

In parallel with these steps by the U.S. and Russia, the dialogue must broaden on an international scale, including non-nuclear as well as nuclear nations. Key subjects include turning the goal of a world without nuclear weapons into a practical enterprise among nations, by applying the necessary political will to build an international consensus on priorities. There should also be an agreement to undertake further substantial reductions in U.S. and Russian nuclear forces beyond those recorded in the U.S.-Russia Strategic Offensive Reductions Treaty. As the reductions proceed, other nuclear nations would become involved.167

Last year, Kofi Annan said that the world risks becoming mired in a sterile stand-off between those who care most about disarmament and those who care most about proliferation. The dangers of such mutually assured paralysis - as he termed it - are dangers to us all. Weak actions on disarmament, weak consensus on proliferation are in none of our interests. And any solution must be a dual one that sees movement on both proliferation and disarmament - a revitalisation, in other words, of the grand bargain struck in 1968, when the Non-Proliferation Treaty was established.168

Consensus on tightening-up the non-proliferation regime will be impossible unless the five official NWS — the United States, Russia, China, France and Britain — agree to take concrete steps to remove nuclear weapons from their security doctrines, to not build new weapons, and to accelerate dismantlement of existing arsenals. The original aim of the NPT was to restrict the weapons to the five countries that already openly possessed them, all of which agreed to take steps to disarm. As a part of the 'grand bargain', other states agreed not to develop nuclear weapons, but were guaranteed an 'inalienable right' to use nuclear energy for peaceful purposes, dubbed atoms for peace. Over the past decade, the NWS reluctance

to embrace their side of the NPT bargain has stalled non-proliferation efforts. The arms and stockpiles of the weapons states are also a big problem.

Uranium enrichment is sophisticated and expensive, but it is not proscribed under the NPT. Under the current regime, therefore, there is nothing illicit in a non-nuclear-weapon state having enrichment or reprocessing technology, or possessing weapon-grade nuclear material\textsuperscript{169}.

Article IV of the NPT specifically relevant are the references contained the "inalienable right" of NNWS to develop nuclear energy and the obligations by all to "facilitate" and "cooperate in" the development of nuclear energy.

The INC or any multilateral approaches point to loss or limitation of state sovereignty and independence of ownership or control over a main technology sector. Countries with differing levels of technology, economic development and resources might find the INC inconvenient, unfeasible, restrictive or not beneficial.

There is no existing legal norm requiring participation in INC Thus, the establishment of one rests upon voluntary participation. States will enter into such multilateral arrangements on the basis of economic and political incentives and disincentives offered by these arrangements.

Article IV of the NPT reaffirms the "inalienable right" of all the NPT States to develop research, production and use of nuclear energy for peaceful purposes in conformity with article one and two\textsuperscript{170}. The peaceful uses of nuclear energy is related to the main bargain of the NPT that included the security and development. The NPT deals with the security through the non-proliferation and eliminate the nuclear threat through forbidden the NNWS from acquired the nuclear weapons. Article IV also deals with the development through the inalienable right of the peaceful uses of nuclear energy\textsuperscript{171}.

The NPT objective is to prevent the spread of nuclear weapons, to promote cooperation in the peaceful uses of nuclear energy and to further the goal of achieving general and

\begin{itemize}
  \item \textsuperscript{169} IAEA Director General Dr. Mohamed ElBaradei, Towards a Safer World. The Economist. 16 October 2003.
  \item \textsuperscript{170} IAEA INFCIRC 140
\end{itemize}
complete nuclear disarmament\textsuperscript{172}. There is an international trend think that treaty articles, may be used by some NNWS as a justification for developing uranium enrichment and reprocessing capabilities, which under cretin conditions, could be utilized for nuclear weapons proliferation. The NNWS NPT members assured that they have "inalienable right" to acquire these technologies\textsuperscript{173}.

INC could share (as the IAEA study on MNAs mentioned) a potential weakness with their national counterparts, namely the risk of the host country "breaking out" by creating a political emergency, expelling multinational staff, withdrawing from the NPT (and thereby terminating its safeguards agreement), and operating the multilateral facility without international control. For multinational nuclear fuel cycle centers to be acceptable, this risk would need to be addressed, even though MNAs offer in that case a better protection than national facilities, thanks to the intertwining multilateral activities\textsuperscript{174}.

The INC suggestion needs attempts to study it in accordance with the spirit of the NPT. The all countries should be assured that the assurances of supply frameworks are not intended to alter the right of any state to take its own decision regarding fuel cycle choices. Any country will not accept to commit itself with commitments more than the NPT commitments.

\textbf{5.6.2 Political aspects}

In considering international co-operation, political requirements are also of high priority. Political considerations inevitably require that nations cooperate in the implementation of measures to facilitate nuclear cooperation in peaceful uses of nuclear energy. It is probably this aspect of nuclear power which currently dominates world thinking on nuclear energy. Proliferation issues cannot be divorced, however, from the more general question of the acceptance of nuclear power by the world's population at large\textsuperscript{175}. The prevention of nuclear weapons proliferation requires that both, supplier and customer nations, work together to

\textsuperscript{173} George Bunn, the World's Non-Proliferation Regime in Time. IAEA Bulletin Vol. 46 , No. 2 Op.cit, p9
\textsuperscript{175} C. Allday, International Co-operation in the Supply of Nuclear Fuel Cycle Services. British Nuclear Fuels Limited (BNFL), Risley, Warrington, Cheshire, United Kingdom
develop acceptable policies. Some suggest concentrating on the regional conflicts that cause states to choose nuclear weapons. The international community, especially the great power, should concentrate on the motivations and incentives that push the states to search about nuclear weapons especially if this area has one county have nuclear weapons such as the Middle East. The establishment of Middle East nuclear weapons free zone will help in this line.

5.6.3 Analysis of economic benefits

As the INC proposal mentioned that lessons learned in the economic area of nuclear energy show that the enrichment accounts for 10% of the total cost of nuclear power plant (NPP), and spent fuel management - another 10% -15% and this low expenditure still is valid for the commercial level of nuclear fuel cycle facilities. Reasonably efficient fuel cycle costs are achieved in facilities serving NPP parks on the scale of dozens of GigaWatt (GW). Many states started their national nuclear program by buying reactors and fuel cycle services and only after reaching a certain level of development achievement they start to develop domestic reactors and fuel cycle technologies on a national level.

First, when we address economic concerns, we mention that the existing nuclear power programs in developing countries have been largely financed by the public sector. The public sector does not require the same rapid return on investments as do private investors in liberalized markets. Second, the country can directly incorporate in its decisions beneficial externalities that are effectively invisible such as national energy supply security, the development of an advanced high technology industrial base and environmental protection. Third, In the developing countries, the high costs of first nuclear power plant were accepted as part of a long term national energy strategy that anticipated both eventual cost reductions from ‘technology learning’ and spin-off economic benefits from developing the country’s high technology sector. A recent study estimated these economic spin-off benefits from nuclear power at about 2% of the country’s GDP. Fourth, as the proposal mentioned the enrichment accounts for 10% of the total cost of nuclear power plant. Fifth, The countries that planning to nuclear power plant apply external supply strategy in reactor sector, which represents the majority of its economic expenditure (some 70%). The comparative economics of nuclear fuel

176 Ibid
depend also on the economics of alternatives and thus on the economic prospects of domestic production of nuclear fuel. The prices of uranium also increased, but because uranium constitutes about 5% of nuclear power generating costs (as a study prepared by International Energy Agency), this price's increase – unlike those high of fossil fuel-improving nuclear power's competitiveness.

Other problems which have to be considered are those related to establish and operate INC smoothly and efficiently. Efficient mechanisms have to be established for speedy consultation and decision making to achieve its objectives. The parties must be allowed sufficient flexibility to control their construction, production and development programs whilst at the same time ensuring a high degree of coordination. All these require objective thinking, good-will and a clear identity of interests. There is a striking disparity in the distribution of uranium supply and demand throughout the world. In attempts to guarantee supplies, utilities have progressively entered into joint ventures with mining companies and/or other interests in exploration for new reserves and exploitation of known deposits. Some new mechanisms might be formed to increase flow of information between customers and suppliers, bring customers and suppliers together, and promote improvements in exploration and extraction techniques. Groups of nations or utilities are coming together to ensure a secured share of future uranium supplies for the individual participants concerned.

### 5.6.4 Assurances of Supply

Some go to the extent of saying that there is a nuclear power renaissance. A greater number of States would consider developing their own nuclear facilities and nuclear know-how and seek assurances of supply in materials, services and technologies. There is a debate related to decide whether the material to be assured or the material to be guaranteed is the nuclear fuel itself or the enriched uranium, or both. The INC proposal and all other proposals that mentioned before, seek to provide an assurance of supply of low enriched Uranium.

Many efforts have been exerted to ensure assurances of supply. Among the more visible efforts in the 1980s was the IAEA Committee on Assurances of Supply (CAS, 1980-87). This initiative also failed for a variety of political, technical and economic reasons.
One of the most critical steps in the study undertaken by an IAEA expert group in 2005 is to devise effective mechanisms for assurances of supply of material and services, mechanisms which are commercially competitive and free of monopolies. Effective assurances of supply will have to include back-up sources of supply in the event that an MNA supplier is unable to provide the required material or services. Back-up commitments provided by suppliers of enrichment services underpinned by commitments from their governments to allow such supply. The back up commitments could be utilized when predetermined criteria are met following a political disruption. In this context, the IAEA could play a central role as a guarantor and end-user free of national consent rights\textsuperscript{177}.

One of the most important benefits from the internationalization of the nuclear fuel cycle is assuring the supply of nuclear material or fuels either indigenously or through arrangements with national or other multinational entities. The most advantage of that proposal is it based on the participatory principle from the stakeholder states in the process of nuclear materials supply. The participation will be rather, from the guarantee of supply side, than just being the states at the receiving end. The INC members will benefit from the assured access to enrichment services.

Although this analysis above, no body can debate the right for every NPT party to use nuclear energy for peaceful purposes to support the sustainable development and we should also respect the right for every NPT party to arrange its needs from nuclear materials according to its national policy with respect the IAEA full scope safeguards under its NPT obligations. Without assurances of supply of nuclear material, equipment and services for the peaceful uses of nuclear energy, it will be difficult to convince any country to drop of its right in investing in the production of nuclear materials for nuclear fuel.

5.6.5 Nonproliferation

It took some time for assurances of non-proliferation and assurances of supply and services to regain prominence in present efforts on internationalization of the cycle amid recent serious challenges to the nuclear non-proliferation regime, with the nuclear non-Proliferation Treaty (NPT) at its core. A greater number of States would consider developing

their own nuclear facilities and nuclear know-how and seek assurances of supply in materials, services and technologies. One of the important benefits from the internationalization of the nuclear fuel cycle is the proliferation resistant as each participated country would check on the others (mutual inspection) to guarantee that nuclear material or fuel or equipment in nuclear fuel cycle use in peaceful purposes.

Non-proliferation undertaking would be considered as a qualifying criterion. It should be mentioned however, that in accordance with the IAEA Statute an assurance mechanism would have to be available to all Member States in a non-discriminatory manner. For any mechanism, whether or not it involves a role for the Agency, certain release criteria would need to be defined and agreed upon, either by the IAEA Board of Governors, or a supply consortium. Another aspect requiring further assessment is how best to assure that the application of the release mechanism is demonstrably non-political, and based on objective criteria. If an Arab nuclear fuel cycle were to be established, it would also have to abide by IAEA standards of non-discrimination as well as to non-proliferation criterion. 

There is a very important question in this regard. This question is "Is the nuclear fuel cycle responsible for proliferation?"

I know when any one read this question; I think he will be very astonished. Is that question still valid to ask until now? But, from my point of view, and other analysts, this is a very important question. Perhaps the most fundamental question, not just about the internationalization the nuclear fuel cycle proposals, but about the long history of proliferation concern about the nuclear fuel cycle, is what role it has actually played in nuclear proliferation. Theoretically, the construction of nuclear fuel cycle facilities could be use as a cover for a weapons program. However, practically, the fact is that the civilian nuclear fuel cycle especially nuclear power plants for the use of nuclear energy for electricity generation and sea water desalination, has not been a significant contributor to nuclear weapons proliferation. Those states that wanted nuclear weapons have gone straight for them. Israel, India and North Korea used research reactors. Pakistan got the centrifuge technology from foreign companies and applied it directly to its nuclear weapons program. All these countries

had the nuclear weapons either before they had civil nuclear power program such as India and Pakistan or still have not civil nuclear power program such as Israel.

Other states such as Iran had a clandestine enrichment program but only when this program was discovered did it justified it was for civilian purposes.

Clearly, enrichment and reprocessing technologies are serious nuclear proliferation dangers, but the civilian nuclear fuel cycle has, at least to date, not facilitated nuclear weapons proliferation. Nor has it been used for cover in a nuclear weapons program. If so, internationalization the nuclear fuel cycle proposals to ensure “access, at reasonable cost, to fuel” may not help with the real problem of nuclear proliferation concerns.

While there have been serious leaks of technology from the traditional supplier nations, according to the political considerations, which need to be stopped, the new proliferation problem arises from the fact that the basic technology for reprocessing and enrichment has already leaked in the states that already used it in nuclear weapons production. These problems are very difficult to solve. It is perhaps understandable that governments seek to define problems in ways that are easier to solve. But we should not believe that we are actually solving the real problem179. So, many analysts believe it is too late, perhaps by several decades, for the restrictive fuel cycle approach. Instead, we will have to focus on the nuclear proliferation that already happened in four countries (Israel, India, Pakistan and North Korea.

5.6.6 Safeguards and export control

There is no doubt that the internationalization of the nuclear fuel cycle will facilitate the task of the IAEA in exercising its safeguards activities. But, the existing elements of the safeguards regime itself could be very useful. If the objective of the study undertaken by an IAEA expert group on MNAs is merely to strengthen the non-proliferation regime then, rather than focusing on MNAs, it may be better to concentrate instead on the existing elements of the regime itself, for example, by seeking the universality of the NPT. Some argued to
concentrate on the universality of the Additional Protocol (AP) to IAEA safeguards agreements and by the strengthening of export controls. I personally very surprised about this argument that did not call upon the NPT non member states (Israel, India and Pakistan) to accede to the treaty, while calling upon NPT member to accede to Additional Protocol and seeking the universality of the Additional Protocol to IAEA safeguards agreements.

With the Cuba's accession to the NPT, only three of the 192 UN member states, India, Israel and Pakistan, remain outside the treaty\textsuperscript{180}. India and Pakistan conducted nuclear tests in 1998 and became de facto Nuclear Weapons States and refused to be parties to NPT. As well as, Israel is the only country in the Middle East which is not a party to the NPT although its acquisition nuclear weapons according to many reports. It is difficult to prevent further cases of nuclear proliferation because the normal instruments such NPT and the international mechanisms for controlling nuclear technologies no longer are sufficient to prevent nuclear proliferation because it missed the universality. The Israel, India and Pakistan status remains a significant problem for the non proliferation regime that currently exists. It is important to note that the 1995 NPT Review and Extension Conference also adopted a resolution on the Middle East that reaffirms the important of early realization of universal adherence to the NPT and calls upon all states in the Middle East that have not yet done so, to accede to the treaty as soon as possible and place their nuclear facilities under full-scope IAEA safeguards\textsuperscript{181}.

The conclusion of the IAEA Model protocol INFCIRC 540 additional to INFCIRC/153 to strengthen the IAEA safeguards system. Advanced inspection and monitoring techniques were introduced in the global treaties such as challenge inspections, managed access, special inspections, wide – area- environmental sampling or on-site-inspections. Advanced monitoring technologies and sensors are now available. This is a field of considerable developments\textsuperscript{182}.

The U.S. also has proposed that the NSG withold peaceful nuclear trade from those nations that do not yet have uranium enrichment and spent fuel reprocessing technology unless they undertake never to acquire such technology\textsuperscript{183}. This is a de-facto revision of the

\textsuperscript{180} www.iaea.org/ NPT Status.
\textsuperscript{181} Document NPT/ Conf. 1995, 32/RES/1.
\textsuperscript{182} IAEA, INFCIRC / 540. IAEA, INFCIRC / 153.
\textsuperscript{183} President Announces New Measures to Counter the Threat of WMD. http://www.ndu.edu/info/whatsnew/presBush-NDU.cfm
NPT central bargain of non-proliferation in exchange for making peaceful technology available and nuclear arms control. The Nuclear Weapons States tried to change the rule of the game. The U.S. emphasize on the clear linkages established in Article IV between the peaceful uses of nuclear energy and compliance with the NPT's nonproliferation obligations. The potential abuse of the NPT guarantee of access to peaceful nuclear technology is a serious problem no one denies but it must be resolved in a perceived equitable way such as follow:

First, the NPT regime also may survive as a livable international legal only if it is consistently adhered to and supported by all its members, both Nuclear Weapons States and Non-Nuclear Weapons States and the remaining non-member States are included in the regime.

Second, one of the most important goals in assuring the survivability of the regime is the intent of Nuclear Weapons States to take a step on disarmament road and to lessen their reliance on nuclear weapons as a prime factor of their foreign policy objectives and practices. This is one of the most pressing requirements included among the 13 steps adopted by the 2000 NPT Review Conference.

Third, the cornerstone of strengthening nonproliferation regime is the political commitment and will of the NPT parties to enter into implementing the central bargain of NPT and universally supported undertaking, in the context of a global security system.

Fourth, the translation of this commitment to implement legally binding and sound NPT commitments is the essential step in building a new world.

Fifth, Preparatory work should start by countries who are parties to the treaty, especially, states sponsoring the International peace and security namely U.S.A, Russian Federation, Britain, France and China. The Nuclear Weapons States cares about the potential proliferation of nuclear weapons, but does it care enough to make necessary requirements such as:

1. Implementing its commitments to disarm nuclear weapons
2. Moving toward CTBT ratification
3. Pledging not to resume nuclear testing

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4. Reaffirming the pledge never to use nuclear weapons against NPT Non–Nuclear Weapons States
5. Restarting the strategic arms reduction process.

5.7 An Arab perspective towards the establishment of the INC Proposal

The INC suggestion, legally, is not in the line with the NPT especially with the article IV of the NPT that reaffirms the "inalienable right" of all the NPT States to develop research, production and use of nuclear energy for peaceful purposes. Under the NPT current regime, therefore, there is nothing illicit in a non-nuclear-weapon state having enrichment or reprocessing technology, or possessing fissionable nuclear material. There is no existing legal norm requiring participation in INC. The INC or any multilateral approaches point to loss or limitation of state sovereignty and independence of ownership or control over a main technology sector. Countries with differing levels of technology, economic development and resources might find the INC inconvenient, unfeasible, restrictive or not beneficial. It is necessary to mention that any proposal should realize the principle of disengagement between the nuclear energy technologies supply and impose any new obligations not included in the NPT.

Relating to the NPT, Although the international community exert a huge efforts to strengthen and the effectiveness international nuclear law, and improve the efficiency of the safeguards system as a contribution to global non-proliferation regime, there is no minimum efforts, especially from the NWS, to place framework to nuclear disarmament. There is a gap between the efforts that exerted to nonproliferation and the others to disarmament. The Non–Nuclear Weapons States convinced that the only hope of stopping the proliferation of Nuclear Weapons is to address nuclear disarmament with the same eagerness. This is precisely the stance taken by Foreign Ministers of the New Agenda Coalition (Egypt, Brazil, Ireland, Mexico, New Zealand, South Africa and Sweden) who wrote: "Nuclear nonproliferation and nuclear disarmament are two sides of the same coin and both must be energetically pursued".

This pertain to how to structure assurance mechanism in a manner that would not result in a real or perceived division between nuclear fuel/reactor technology haves and have-
nots, and does not undermine existing multilateral, treaty-based nuclear non-proliferation norms or State sovereignty/rights. In this respect, it would be important to re-read Article IV of the NPT on co-operation on peaceful uses of nuclear energy, which has encouraged Parties to the Treaty to engage fully in such co-operation.\(^\text{185}\)

The nuclear double standard has to end, and the process of complete global nuclear disarmament has to start. The NPT must be transformed into a true disarmament and nonproliferation treaty as was the intent of the states parties in 2000 when they committed themselves on "unequivocal undertaking" to rid the world of nuclear weapons.\(^\text{186}\) Some of great powers might have no support any nuclear projects under many allegations.

The INC suggestion needs attempts to study it in accordance with the spirit of the NPT. We can conclude that the INC suggestion not feasible legally and politically.

Regarding with the economic benefits, The INC suggestion may be economically feasible for the country will use one nuclear power reactor. In the long term, it will not be economically feasible for the country is planning for nuclear power program and efficient nuclear fuel cycle costs are achieved in facilities serving NPP parks on the scale of dozens of Giga Watt.

Regarding to Nonproliferation, clearly, enrichment and reprocessing technologies are potential nuclear proliferation, but practically, the civilian nuclear power programs and its nuclear fuel cycle has, at least to date, not facilitated nuclear weapons proliferation. Nor has it been used for cover in a nuclear weapons program. Those states that wanted nuclear weapons have gone straight for them. Israel, India and North Korea used research reactors in producing nuclear weapons. If so, internationalization the nuclear fuel cycle proposals, such as INC may not help with the real problem of nuclear proliferation concerns.

Relating to safeguards and export control, there is no doubt that the internationalization of the nuclear fuel cycle will facilitate the task of the IAEA in exercising its safeguards activities. But, the existing elements of the safeguards regime itself could be very useful. If the objective of the INC is merely to strengthen the non-proliferation regime, it may be better to

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\(^{186}\) Douglas Roche, Re-nuclearization or Disarmament: A Fateful Choice For Humanity. May 2004

www.middlepowers.org
concentrate instead on the existing elements of the regime itself, for example, by seeking the universality of the NPT and call upon the NPT non member states (Israel, India and Pakistan) to accede to the treaty.

It is clear that the Arab countries are planning to use nuclear energy in the electricity generation and seawater desalination for the sustainable development. The Arabs would have the expertise, the scientists, uranium ore deposits, research reactors, fuel fabrication skills on a small scale, accelerators and other nuclear-related laboratories. In the present international context and the policies imposed by the Nuclear Suppliers Group (NSG), the NNWS (including the Arab States) would face difficulties in investing, individually or collectively, in uranium enrichment, fuel reprocessing or heavy water production, the so-called sensitive technologies. The vehement opposition we are witnessing against the Iranian enrichment program is also a signal that an enrichment plant would not be tolerated, although enrichment is permitted under the NPT and a number of non-nuclear-weapon States Parties to the NPT are investing in it including Germany, the Netherlands, Brazil and more recently by Japan.

It would lead us to examine regionalization of the nuclear fuel cycle and its potentials in the Arab world, and more specifically the Arab nations joining together in building up gradually a regional nuclear fuel cycle in their region. In the Arab region, the build up of a potential regional nuclear fuel cycle would be expected to be slow and gradual especially with regard to the areas they are knowledgeable about.

In our opinion, an attempt should be made to develop an Arab Nuclear Fuel Cycle Center (ANFCC) that include only arab states. It can be one of the AAEA bodies. The most important mission of the ANFCC will be guarantee to the Arab countries only, the ability to get nuclear fuel for their nuclear power programs. Arab countries aleardy has similer center. From the 1960s of the past century, the Arab countries have been interested in the peaceful uses of atomic energy in the Arab area. In 1963, the Middle East Regional for Radioisotopes Center for Arabic Countries (MERRCAC) was established by Arabic Countries based on the Egyptian proposal introduced to the International Atomic Energy Agency (IAEA). The IAEA and Egypt concluded an agreement to establish the MERRCAC in Cairo, Egypt. Later, many Arab countries ratified the agreement and participated in the Center. This is the first fruitful

cooperation in the nuclear field between Arab countries. The Center is still working an important role in the R&D in the field of the radioisotopes fuel uses\textsuperscript{188}. This Center is working according the international standards and with full cooperation with the IAEA. The proposed center may be build on the experiences of the many Arab countries were gained from the fuel fabrication such as Egypt and Algeria.

The Riyadh Arab Summit already adopted a resolution provide support to the AAEA. The AAEA should be strengthen e to play such a pivotal role. After Riyadh Arab Summit declaration, are we going to witness in the foreseeable future the emergence in the Arab region of an Arabatom (like Euratom), which could be a prelude to an Arab Union following the path that Europe traveled on since 1957? A virtual reserve of Arab fabricated fuel could be made available for the parties to the regional nuclear fuel cycle. This would presuppose investing more heavily in fuel fabrication by the Arab countries presently advanced in this technology. As a number of Arab countries have operated the technology of fuel fabrication (e.g. Egypt/Algeria), they may be more interested in assuring the supply of enriched uranium\textsuperscript{189}.

The type of arrangements for nuclear fuel provision would be attractive or unattractive in the light of every country's national interests. So, some Arab countries already signed nuclear cooperation agreements with other countries. UAE and Qatar have signed nuclear cooperation agreements with France last January, while Algeria has signed nuclear cooperation agreement with USA. Other Arab countries (such as Egypt) also have old, (but still valid) nuclear cooperation agreements with USA, France and Germany. For Egypt, a nuclear cooperation agreement with the USA signed in 1982, after its ratification of the NPT. According to the agreement, the United States is to provide Egypt with the fuel along with the reactor, provided that Egypt would return the spent fuel to the US, which would then compensate Egypt for it financially. Today, however, the guarantee of fuel supply as a back up measure is a basic requirement, especially in case of its interruption for political reasons. Also, in some cases it will be better to separate between the supply and building of a nuclear power plant and the fuel needed for it. The fuel needed could be guaranteed through reliable arrangements through the IAEA or regional organizations (For Arab it will be AAEA) that would guarantee the fuel supply to its participants in the nuclear fuel cycle.

\textsuperscript{188} For more details visit the Center web site: www.merrcac.com.
The analysis of all initiatives and proposals in the third part of this study appeared that most of them are concerned with the supply mechanism. None of them has dwelt thoroughly on the merits of a regional nuclear fuel cycle as suggested by the Director-General of the IAEA in 2003. The INC also is concerned with the supply mechanism not the regional nuclear fuel cycle. So, we suggest above an Arab nuclear fuel cycle.

The ideas of the INC should take its time and more discussion with the stakeholder states and should also not affect their right in the peaceful uses of nuclear energy that is permitted under the NPT. Some countries would have one less reason to invest in the enrichment facilities. This proposal may be, however, won't be enough to ensure fuel supplies for many reasons:

First, although this proposal address the worries of some states about the spread of enrichment technologies, the country utilities also worry about getting their fuel under exercising their rights under the NPT.

Second, states may not trust in the proposed INC board of directors or whatever the body which will mange it, to be independent of dominant member countries. These utilities countries have former experience from the IAEA Board of Governors. The most advanced States in the nuclear technology who are, at the same time, major suppliers of nuclear technology and parties to the NSG would have the upper hand in the IAEA Board of Governors. They can block in certain cases the supply of nuclear material and equipment to potential user States. There is also an important question related the initiatives and proposals such as INC; what is the situation of the NSG from these proposals especially in the lake of a dialogue between this group and the potential recipient States?

Third, although the INC may be involve the private sector and the largest nuclear energy industries in the world, the problem that not solve is, how the INC board decisions will be technical based and independent of the political interests?

We can also say that, regarding the assurance of supply for nuclear materials and technologies especially in case of its interruption for political reasons, the multilateral or international nuclear approaches will not be deferent from the present situation. The INC
membership “advantages” (political, economic, scientific and technical) for the enrichment services recipient countries should outweigh the “disadvantages” of refraining from the development of domestic Nuclear Fuel Cycle capabilities; in particular, it is clear that the establishment of national Nuclear Fuel Cycle capabilities can be economically justified only for a large fleet of nuclear power plants.

International nuclear Consortium is not an easy proposal to implement. This paper indicates that the multilateral or international nuclear approaches an old idea has been proposed in the past decades. Some analysts wrote that "However, in the light of current challenges to the non-proliferation regime, the time might be right for making progress in achieving international consensus in support of multilateral approaches to the nuclear fuel cycle"\(^\text{190}\). But, many analysts also think that many of the reasons for the failure of previous initiatives on multilateral approaches may still be pertinent today.

I would like to mention that it is very important to guarantee that any assurance mechanism would not result in a real or perceived division between those two categories of States. In any future mechanism there should be a role for the recipients of technology and materials together with the suppliers. Although the safety and securely allow for developing nations to deploy nuclear power to meet energy needs is the benefit from the INC, The INC also is, with some of the other proposals, may accentuate the divide between the haves and the have-nots.

In his presentation in workshop in Vienna, April, 2007 Ambassador Mohamed Shaker with regard to the initiatives and proposals for the multilateral or international nuclear approaches which are concerned with the supply mechanism, said that he is afraid one or two of the initiatives or proposals may accentuate the divide between the haves and the have-nots. It is very important to guarantee that any assurance mechanism would not result in a real or perceived division between those two categories of States\(^\text{191}\).

In his last analysis, Ambassador Shaker concluded that internationalization in different forms (such as the proposed INC) can take place if political will exists, under conditions of non-proliferation and smooth co-operation. It can only be a gradual process with regard to the different stages of the nuclear fuel cycle, especially with regard to the so-called sensitive stages of the cycle, namely enrichment, reprocessing and the disposal and storage of spent fuel. We have tried in this paper to put forward few ideas about a potential regional nuclear fuel cycle in the Arab region. The IAEA is well placed to encourage and to be involved in such an international endeavor. The only draw back is that most advanced States in the nuclear technology who are at the same time major suppliers of nuclear technology and Parties to the Nuclear Suppliers Group would have the upper hand in the IAEA Board of Governors. They can block in certain cases the supply of nuclear material and equipment to potential user States. As a first step to reduce the influence of the nuclear supplier States and their group would be to open up the group for the admission of the user States and carry an ongoing dialogue together for the benefit of the two categories of States. This dialogue is missing now and the user States are often confronted with decisions made in their absence, and without taking into consideration their essential needs and concerns. This new partnership should be institutionalized in a way that would guarantee new voices in the making of decisions or formulating guidelines for the export of nuclear material and equipment. As a second step, and apart from converting or constructing new international facilities in the nuclear fuel cycle, we should test such possibilities by pilot simulation projects to find out how such new entities would work in an atmosphere of openness, but at the same time conscious of the proliferation dimensions related to these potential activities. Pilot simulation will be badly needed in the Arab region\textsuperscript{192}.

This situation may even lead to the formation of regional nuclear fuel cycles that would challenge the dominance of the NSG and would call into question its existence in its present format.

The most important element in all of that is that we must reach a stage where no supplier country alone can hamper or interrupt a co-operative venture in the field of peaceful uses of nuclear energy for political reasons. Our objective should be to protect the user State who has lived up to its international commitments and obligations and to allow it to continue,

unhindered, in its peaceful nuclear activities. Every individual State participating in an international or regional nuclear fuel cycle should feel that it has a say in one way or another in the operation or the running of such an enterprise. This participatory aspect is just as important as the guarantee of supply.

We should search about a balanced, nondiscrimination mechanism that reserve the state's inalienable right to develop nuclear technology for peaceful uses alike with realize the safeguards and ensure the nuclear non proliferation. The developed countries should understand that it's help the developing countries in developing its nuclear technology in the international framework based on the NPT will resolve many issues. The developing countries, in its evaluation to the international proposals relating the nuclear fuel cycle will take into its considerations the article four of the NPT.