

**Joseph Cirincione  
Director, Non-Proliferation Project  
Carnegie Endowment for International Peace**

**“Assessing the Ballistic Missile Threat”**

**Subcommittee on International Security, Proliferation and Federal Services  
Committee on Governmental Affairs  
United States Senate**

**February 9, 2000**

| [appendix](#) |

Thank you for the privilege of testifying before the Subcommittee. I respect the work that the Subcommittee Chairman, members and staff have done to document the most serious threat to the national security of the United States: the proliferation of weapons of mass destruction. It is an honor to discuss these issues with you today.

By way of background, I served for nine years on the professional staff of the House Armed Services Committee and the Government Operations Committee, beginning in 1985. My duties included tracking and analyzing developments in nuclear and ballistic missile programs and efforts to develop ballistic missile defenses. I continued this analytical work during four years as a senior associate at the Henry L. Stimson Center in Washington and now for two years in my current position at the Carnegie Endowment.

I have carefully reviewed the unclassified version of the 1999 National Intelligence Estimate (NIE), “Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015,” released on 9 September and can comment on the version available to the public.<sup>[1]</sup>

The unclassified summary of the NIE (hereafter referred to as the NIE) presents a careful view of some of the ballistic missile threats to the United States. However, I have identified some potentially significant shortcomings in the report.

First, the 1999 NIE portrays known missile programs in developing countries as more immediate threats than have previous assessments. While there have been several significant tests of medium-range ballistic missiles in the past two years, these new findings are more a function of lowered evaluative criteria than of major changes in long-range missile capabilities. The change from previously established intelligence agency criteria should be more clearly defined so that policy-makers may better understand why this NIE differs from all previous estimates.

Second, by assessing “projected possible and likely missile developments by 2015 *independent* of significant political and economic changes,” (*emphasis added*) the NIE may overestimate potential ballistic missile threats from Iraq, Iran and North Korea, underestimate the dangers from existing insecure arsenals in Russia, and poorly prepare policy-makers for the sharply deteriorated international security environment that would emerge should the non-proliferation regime weaken or collapse.

Third, by focusing on developments in a small number of missile programs in developing nations, the NIE neglects the dramatic declines in global ballistic missile arsenals. The missile threat is certainly changing, and is increasing by some criteria. But by several other important criteria, the ballistic missile threat to the United States is significantly smaller than it was in the mid-1980s.

Fourth, due to limitations in the scope of the report, the 1999 NIE may not fully represent the range of threats to the United States from weapons of mass destruction. The estimate does, however, contain critical findings that may be overlooked or misused if the report is viewed solely as a justification for a decision to deploy a national missile defense system. Two of the most important findings are found at the end of the assessment:

- Any country that could flight test an ICBM will be able to develop “numerous countermeasures” to penetrate a missile defense system.
- There are several other means to deliver weapons of mass destruction to the United States that would be more reliable, less expensive and more accurate than potential new intercontinental ballistic missiles over the next 15 years.

These two observations imply that, to the extent the missile threat is increasing, a national missile defense system may still not provide an effective defense of the United States.

## I. Over-Estimating ICBM Threats from Developing Nations

Every since the 1998 report from the Rumsfeld Commission asserted, somewhat hysterically, that a new nation could plausibly field an ICBM “with little or no warning,” analysts have struggled to cover all possibilities, while still preserving some predictive net assessment. This conflict is evident in the introduction to the NIE, which notes a dissenting opinion from one of the intelligence agencies involved in producing the consensus report:

“Some analysts believe that the prominence given to missiles countries ‘could’ develop gives more credence than is warranted to developments that may prove implausible.”

This “could” issue is perhaps the most striking difference between the 1999 NIE and those published in 1993 and 1995. “Could” is a highly ambiguous word. For some it means “remotely possible;” for others it means “will.”

The shift to the “could standard” represents one of the three major changes made to the assessment methodology from previous assessments. The other two shifts are:

- substantially reducing the range of missiles considered serious threats by shifting from threats to the 48 continental states to threats to any part of the land mass of the 50 states; and,
- changing the timeline from when a country would first *deploy* a long-range missile to when a country could first *test* a long-range missile.

The shift of potential US targets represents a range change of some 5,000 kilometers (the distance from Seattle to the western-most tip of the Aleutian Island chain in Alaska). It essentially means that an intermediate-range ballistic missile, such as the Taepodong-1, could be considered the same threat as an intercontinental-range missile. The Taepodong-1 tested on August 31, 1998, impacted 1320 kilometers from its launch point, and tried but failed to put a small satellite into orbit. This missile does not have the range to strike any part of the United States with a large payload (for example, a nuclear warhead), though it might be able to strike the western most parts of Alaska and Hawaii with a very small payload. The Taepodong-2 is theoretically judged to have a range of 4,000 to 6000 kilometers, allowing it to strike parts of Alaska and Hawaii. A three-stage Taepodong-2 could have a longer range.

The timeline shift represents a difference of five years (what previous estimates said was the difference between first test and likely deployment). “With shorter flight test programs—perhaps only one test—and potentially simple deployment schemes, the NIE concludes, the time between the initial flight test and the availability of a missile for military use is likely to be shortened.” The Indian experience with the Agni missile provides some indication that the original standard may be the more accurate. The Agni program began in the mid-1980s. An Agni-1 missile was flight tested in February 1994 and a medium-range, 2,000 -km version, the Agni-2, was tested in April 1999. Despite Indian declarations of intent to deploy and substantial financial and scientific resources devoted to the program, the missile has yet to enter production.

These three changes account for almost all of the differences between the 1999 NIE and earlier estimates. Thus, the new estimate, rather than representing some new, dramatic development in the ballistic missile threat, represents a lowering of the standards for judging the threat. This NIE may lead some observers to conclude that there has been a significant technological leap forward in Third World missile systems, when, in fact there has been only incremental development in programs well known to analysts for years.

For example, the 1993 NIE ("Prospects for the Worldwide Development of Ballistic Missile Threats to the Continental United States," NIE 93-17) said:

"Only China and the CIS [Commonwealth of Independent States] strategic forces in several states of the former Soviet Union currently have the capability to strike the continental United States (CONUS) with land-based ballistic missiles. Analysis of available information shows the probability is low that any other country will acquire this capability during the next 15 years." [ii]

The 1995 NIE ("Emerging Missile Threats to North America during the Next 15 Years," NIE 95-19), as summarized publicly by Richard Cooper, Chairman of the National Intelligence Council, found:

"Nearly a dozen countries other than Russia and China have ballistic missile development programs. In the view of the Intelligence Community, these programs are to serve regional goals. Making the change from a short or medium range missile—that may pose a threat to US troops located abroad—to a long range ICBM capable of threatening our citizens at home, is a major technological leap....The Intelligence Community judges that in the next 15 years no country other than the major declared nuclear powers will develop a ballistic missile that could threaten the continuous 48 states or Canada." [iii]

Several leading members of congress harshly attacked the 1995 and 1993 estimates. In December 1996, a congressionally mandated panel headed by former Bush administration CIA Director Robert Gates reviewed the 1995 NIE. They agreed that the continental United States was unlikely to face an ICBM threat from a third world country before 2010 "even taking into account the acquisition of foreign hardware and technical assistance, and that case is even stronger than was presented in the estimate." [iv]

With the three altered measurement standards and in the wake of the Rumsfeld Commission report, the new 1999 NIE finds that over the next 15 years the United States,

"...most likely will face ICBM threats from Russia, China and North Korea, probably from Iran, and possibly from Iraq, although the threats will consist of dramatically fewer weapons than today because of significant reductions we expect in Russian strategic forces." [v]

The NIE does a real service by making the analysis so specific. It highlights the very narrow nature of the missile proliferation threat, one confined to a few countries whose political evolution will be a determining factor in whether they remain threats to the United States. However, by projecting "possible and likely missile developments by 2015 independent of significant political and economic changes," the NIE limits its value as a risk assessment tool. The adoption of the "could standard" and the selective and partial inclusion of political factors in analyzing the threat are the greatest weaknesses of this NIE.

Some might argue, for example, that the diplomatic developments in North Korea made the NIE obsolete two weeks after it was publicly released. On September 17, 1999, the US administration announced it would ease sanctions against the North in response to a pledge by Pyongyang to halt further testing of long-range missiles. If North Korea does not flight-test the Taepo Dong-2, and if that nation can be further convinced not to export missiles or related technology, we would eliminate the greatest source of an additional ICBM threat to the United States.

Recent talks between the United States and North Korea indicate some possible progress towards that goal. In his October 1999 report, "Review of United States Policy Toward North Korea," former Secretary of Defense William Perry recommended that the United States, together with South Korea and Japan, seek "complete and verifiable" assurances that North Korea had ended its nuclear

weapons program and ceased the testing, production, deployment and export of medium and longer-range missiles.

If North Korea were taken out of the equation there would be very little left to this threat estimate. No mention was made in the report of these diplomatic efforts (whose outline was known at the time) or their potential significance.

Under some other plausible scenarios, North Korea may collapse; democratizing trends in Iran could alter the direction of that nation's program; or a post-Saddam Iraq could restore friendly relations with the West. These, of course, are political risk assessments, not the kind of technology estimates this NIE details, although they were included in previous NIEs. The international political, diplomatic and legal environment is highly relevant to the prospects for global development of ballistic missiles.

#### **. Under-Estimating the Threat from Russia's 5200 Warheads**

By not including political and economic conditions in the evaluation of the threat from Russia and China, the NIE underestimates possible missile developments in those nations.

The assessment assumes that China and Russia will follow essentially status quo paths. According to the NIE, the Russian threat will continue to be "the most robust and lethal, considerably more so than that posed by China, and orders of magnitude more than that posed by the other three [states explicitly named as potential threats]." [\[vi\]](#) The report notes that budget constraints will force the Russian government to reduce the number of deployed missiles and concludes that an unauthorized or accidental launch "is highly unlikely so long as current technical and procedural safeguards are in place." [\[vii\]](#)

However, there is considerable evidence of major problems with Russian command and control systems. The continuing Russian decline could severely weaken current safeguards, increasing the risk of launches in error or missile sales to third countries. After it made a similar assessment of the low risk of accidental or unauthorized launch, the 1995 NIE cautioned:

"We are less confident about the future, in view of the fluid political situation in both countries [Russia or China]. If there were a severe political crisis in either country, control of the nuclear command structure could become less certain, increasing the possibility of an unauthorized launch." [\[viii\]](#)

The NIE also finds that China will only field a few tens of ICBMs (which is its current "minimum deterrent" plan). That, too, could change dramatically if the U.S. and Japan deploy missile defenses in East Asia. China might well believe it must preserve its nuclear deterrent by increasing the number and sophistication of its missiles. Because Russia and, to a lesser extent, China still pose the greatest potential missile threats to the United States, it is important to consider whether a limited NMD would truly be effective against potential missile launches from those countries. Instead of providing defense, a deployed NMD system could provoke responses from Russia and China that would actually exacerbate the threat.

**The  
Wo  
rst-  
Ca  
se  
Sce  
nar  
io.  
Wh  
eth  
er  
mor  
e**

nations  
acquire  
more  
and  
longer-  
range  
missiles  
also  
depend  
fundamentally  
on the  
perceived  
vitality  
of the  
international  
non-  
proliferation  
regime.  
If, for  
example,  
the Senate  
does not  
recons

ider  
its  
refu  
sal  
to  
ratif  
y  
the  
Co  
mpr  
ehe  
nsiv  
e  
Tes  
t  
Ban  
Tre  
aty,  
the  
trea  
ty  
can  
not  
ent  
er  
into  
forc  
e.  
Wit  
h  
the  
trea  
ty's  
futu  
re  
hig  
hly  
unc  
erta  
in,  
Indi  
a is  
unli  
kely  
to  
sig  
n  
the  
trea  
ty  
and  
with  
out  
Indi  
a,  
Pak  
ista  
n

will not. Russian and Chinese ratification of the treaty also becomes unlikely.

Over the next two years it is highly probable that one or all of the nations would then resume testing of nuclear

lear  
we  
apo  
ns.  
Fac  
ed  
with  
a  
we  
ake  
ned  
inte  
rnat  
ion  
al  
regi  
me,  
unc  
erta  
in  
U.S

.  
adh  
ere  
nce  
to  
inte  
rnat  
ion  
al  
co  
mm  
itm  
ent  
s  
and  
the  
em  
erg  
enc  
e of  
ne  
w  
nuc  
lear  
nati  
ons

,  
Jap  
ane  
se  
lea  
der  
s  
ma  
y  
beli  
eve



that  
the  
y  
hav  
e  
no  
cho  
ice  
but  
to  
dev  
elo  
p  
thei  
r  
ow  
n  
nuc  
lear  
det  
erre  
nt,  
fun  
da  
me  
ntal  
ly  
alte  
ring  
the  
glo  
bal  
stra  
tegi  
c  
lan  
dsc  
ape  
.

The

NIE  
doe  
s  
not  
dea  
l  
with  
Jap  
an,  
nor  
hav  
e  
pre  
vio  
us  
unc  
lass

ified  
NIE  
reports

. This is not because Japan is not capable of developing an intercontinental ballistic missile with a nuclear warhead. In fact, Japan could develop an ICBM in a very short

time.  
Indeed,  
as NIE  
-95-  
19  
stated:

“Three  
countries  
are  
not  
hostile  
to  
the  
United  
States

—  
India,  
Israel  
and  
Japan

—  
could  
develop  
ICBMs  
within  
as  
few  
as  
five  
years  
if  
they  
were  
motivated,  
but  
we

judge that they are unlikely to make the necessary investments during the period of this estimate.”  
[\[ix\]](#)

That

It is, military capabilities in these countries are evaluated in light of political and economic con

sid  
erat  
ion  
s.  
Thu  
s,  
whil  
e  
the  
se  
cou  
ntri  
es  
*cou*  
*ld*  
dev  
elo  
p  
ICB  
Ms,  
the  
inte  
llige  
nce  
age  
nci  
es  
con  
clu  
ded  
that  
, in  
thei  
r  
poli  
tical  
jud  
gm  
ent,  
the  
y  
wo  
uld  
not.  
Ho  
wev  
er,  
if  
the  
inte  
rnat  
ion  
al  
mor  
ator  
ium  
on  
nuc

lear  
test  
ing  
end  
s,  
the  
neg  
otia  
ted  
nuc  
lear  
red  
ucti  
on  
pro  
ces  
s  
with  
Rus  
sia  
coll  
aps  
es,  
fun  
din  
g is  
slas  
hed  
for  
coo  
per  
ativ  
e  
thre  
at  
red  
ucti  
on  
pro  
gra  
ms  
in  
Rus  
sia,  
mis  
sile  
def  
ens  
es  
are  
dep  
loy  
ed  
in  
larg  
e  
nu  
mb

ers,  
or  
the  
No  
n-  
Prol  
ifer  
atio  
n  
Tre  
aty  
app  
ear  
s to  
be  
an  
em  
pty  
pro  
mis  
e,  
Indi  
a,  
Isra  
el,  
Jap  
an,  
and  
oth  
er  
nati  
ons  
wo  
uld  
likel  
y  
hav  
e  
stro  
ng  
mot  
ivati  
on  
for  
dev  
elo  
pin  
g or  
acc  
eler  
atin  
g  
the  
dev  
elo  
pm  
ent  
of

indi  
gen  
ous  
nuc  
lear  
we  
apo  
ns  
and  
deli  
ver  
y  
veh  
icle  
s.

The

cat  
astr  
oph  
ic  
coll  
aps  
e of  
the  
non  
-  
prol  
ifer  
atio  
n  
regi  
me  
wo  
uld  
hav  
e a  
far  
mor  
e  
prof  
oun  
d  
infl  
uen  
ce  
on  
the  
spr  
ead  
of  
nuc  
lear  
we  
apo  
ns  
and  
adv



anced  
ed  
lon  
g-  
ran  
ge  
mis  
sile  
tec  
hno  
log  
y  
tha  
n  
wo  
uld  
the  
test  
of  
an  
inte  
rme  
diat  
e-  
ran  
ge  
mis  
sile  
in  
Nor  
th  
Kor  
ea,  
eve  
n  
one  
with  
the  
the  
oret  
ical  
cap  
abili  
ty  
of  
rea  
chi  
ng  
the  
con  
tine  
ntal  
Unit  
ed  
Stat  
es  
with  
a

small payload. However, the latter is analyzed in the NIE, the former is not. This results in an incomplete and distorted picture of the influences and constraints on national missile programs.

**Is  
the  
Mis  
sile  
Thre  
at  
Act  
uall  
y  
Inc  
rea  
sin  
g?**

The

NIE  
refe  
rs  
to  
the  
“ev  
olvi  
ng  
balli  
stic  
mis  
sile  
thre  
at.”  
Thi  
s is  
a  
mor  
e  
acc  
urat  
e  
ter  
m  
tha  
n  
the  
co  
mm  
onl  
y  
use  
d  
“inc  
rea  
sin  
g  
balli  
stic  
mis  
sile  
thre

at.”  
It  
has  
bec  
om  
e  
co  
mm  
on  
wis  
do  
m  
and  
cert  
ainl  
y  
co  
mm  
on  
poli  
tical  
usa  
ge  
to  
refe  
r to  
the  
gro  
win  
g  
thre  
at  
of  
balli  
stic  
mis  
sile  
s.  
But  
is  
this  
true  
?  
The  
thre  
at  
is  
cert  
ainl  
y  
cha  
ngi  
ng,  
and  
is  
incr  
eas  
ing

by  
so  
me  
crit  
eria

.  
But  
by  
sev  
eral  
oth  
er  
imp  
orta  
nt  
crit  
eria

,  
the  
balli  
stic  
mis  
sile  
thre  
at  
to  
the  
Unit  
ed  
Stat  
es  
is  
sig  
nific  
antl  
y  
sm  
alle  
r  
tha  
n it  
was  
in  
the  
mid  
-19  
80s

.

**De**

**cre  
asi  
ng  
ICB  
M  
Ars  
ena  
ls.**

The number of intercontinental ballistic missiles (with ranges over 5,500 kilometers) has decreased dramatically since the height of the Cold War.

During the 1980s, the Soviet Union deployed

over  
r  
9,5  
40  
nuc  
lear  
war  
hea  
ds  
on  
2,3  
18  
lon  
g-  
ran  
ge  
mis  
sile  
s  
aim  
ed  
at  
the  
Unit  
ed  
Stat  
es.  
[\[x\]](#)  
Cur  
rent  
ly,  
Rus  
sia  
has  
few  
er  
tha  
n  
5,2  
00  
mis  
sile  
war  
hea  
ds  
dep  
loy  
ed  
on  
app  
roxi  
mat  
ely  
1,1  
00  
mis  
sile  
s.

This represents a 52 percent decrease in the number of missiles capable of striking the territory of the United States and a 45 percent decrease in the number of nuclear warheads on



the  
se  
mis  
sile  
s.

The

se  
dec  
rea  
ses  
will  
cert  
ainl  
y  
con  
tinu  
e  
ove  
r  
the  
nex  
t  
ten  
yea  
rs.  
Wit  
h or  
with  
out  
the  
imp  
lem  
ent  
atio  
n of  
the  
ST  
AR  
T  
trea  
ties  
,  
Rus  
sia  
is  
exp  
ect  
ed  
to  
fiel  
d  
few  
er  
tha  
n  
2,0  
00

nuclear warheads on missiles and bombers by 2010 perhaps no more than several hundred, depending on political and economic factors. Two thousand warheads would represent an 80 percent

t  
dec  
rea  
se  
fro  
m  
the  
mid  
-19  
80s  
;  
500  
war  
hea  
ds  
wo  
uld  
be  
a  
94  
per  
cen  
t  
dec  
rea  
se.

Dur

ing  
this  
peri  
od,  
Chi  
na  
has  
mai  
ntai  
ned  
a  
forc  
e of  
so  
me  
20  
DF-  
5  
inte  
rco  
ntin  
ent  
al  
balli  
stic  
mis  
sile  
s.  
The  
NIE

projects that this force will remain roughly the same size, although, as noted, military and political developments could result in significant increases.

**Eliminating IRB M Arsenals.**  
The nu

number of deployed intermediate-range ballistic missiles (with ranges of 3,000 to 5,500 km) has also decreased dramatically over the same period. President Ronald Reagan negotiated and

implemented the Intermediate-Range Nuclear Forces (INF) Treaty, eliminating this entire class of missiles from U.S. and Soviet arsenals. The Soviet Union destroyed 1,846 missiles in this range and the Unit

ed  
Stat  
es  
des  
troy  
ed  
846  
balli  
stic  
and  
cru  
se  
mis  
sile  
s.  
Chi  
na  
has  
so  
me  
20  
DF-  
4  
mis  
sile  
s in  
this  
ran  
ge,  
with  
the  
first  
dep  
loy  
ed  
in  
198  
1.  
No  
oth  
er  
nati  
on  
has  
dev  
elo  
ped  
inte  
rme  
diat  
e-  
ran  
ge  
balli  
stic  
mis  
sile  
s,

though the launch of a two-stage Tae po Do ng-2 would add a few missiles to this category. There has thus been close to a 100 percent decrease (98.9 percent) in the threat from IRBMs from



the  
mid  
-19  
80s  
to  
200  
0.

**Inc  
rea  
sin  
g  
Nu  
mb  
er  
of  
MR  
BM  
Pro  
gra  
ms.** Apa  
rt  
fro  
m  
Chi  
na  
and  
Rus  
sia,  
a  
few  
cou  
ntri  
es  
hav  
e  
con  
duc  
ted  
test  
s of  
me  
diu  
m-  
ran  
ge  
balli  
stic  
mis  
sile  
s  
(wit  
h  
ran  
ges  
of

1,0  
00  
to  
3,0  
00  
km)  
whi  
ch  
do  
not  
thre  
ate  
n  
the  
terri  
tory  
of  
the  
Unit  
ed  
Stat  
es.  
Indi  
a  
inte  
nds  
to  
beg  
in  
pro  
duc  
tion  
of  
the  
Agn  
i II,  
with  
a  
ran  
ge  
of  
abo  
ut  
2,0  
00  
km  
and  
ma  
y  
be  
wor  
kin  
g  
on  
lon  
ger-  
ran  
ge

“Surya” missile of up to 3,500-km range. The only other significant medium-range threats come from missiles derived from the North Korean No Dong: Pakistan’s Ghauri (1,300-km range) and Gh

auri  
ll  
(2,0  
00-  
km  
ran  
ge)  
mis  
sile  
s  
and  
Iran  
's  
Sha  
hab  
-3  
(als  
o  
1,3  
00-  
km  
ran  
ge),  
all  
of  
whi  
ch  
hav  
e  
bee  
n  
flig  
ht  
test  
ed.  
The  
re  
are  
so  
me  
spe  
cul  
ativ  
e  
rep  
orts  
that  
Pak  
ista  
n is  
wor  
kin  
g  
on  
a  
"Sh  
ahe  
en

It  
missile  
of  
2,400-  
km  
range  
and  
Pakistan  
has  
tested  
engines  
for  
a  
Ghauri  
III,  
which  
Pakistan  
officials  
claim  
would  
have  
a  
range  
of  
2,700-  
3,000  
kilometers.  
Saudi  
Arabia  
is  
believed  
to  
have  
a

number of DF-3 missiles (2,600-km range) purchased from China before that nation agreed to abide by MT CR restrictions .

**Agi**

**ng Scud Inventories.** Almost all the other nations that possess

s  
balli  
stic  
mis  
sile  
s  
hav  
e  
onl  
y  
sho  
rt-  
ran  
ge  
balli  
stic  
mis  
sile  
s  
(as  
det  
aile  
d in  
the  
atta  
che  
d  
app  
end  
ix,  
*Co  
untr  
ies  
Pos  
ses  
sin  
g  
Ball  
istic  
Mis  
sile  
s*).  
For  
mo  
st  
of  
the  
se  
cou  
ntri  
es  
(22)  
,  
thei  
r  
bes  
t  
mis

sile  
s  
are  
agi  
ng  
Scu  
ds  
bou  
ght  
or  
inh  
erit  
ed  
fro  
m  
the  
for  
mer  
Sov  
iet  
Uni  
on  
and  
no  
w  
dec  
linin  
g in  
milit  
ary  
utilit  
y  
ove  
r  
tim  
e.

The

blur  
ring  
of  
sho  
rt-  
and  
inte  
rco  
ntin  
ent  
al-  
ran  
ges  
for  
the  
wor  
ld's  
mis  
sile  
s



results in the misinterpretation of the oft-quoted assessment that over 25 nations possess ballistic missiles. This is true, but only China and Russia have the capability to hit the United States with nuclear

war  
heads  
on  
inter  
continental  
ballistic  
missiles.  
This  
has  
not  
changed  
since  
Russia  
and  
China  
deployed  
their  
first  
ICBMs  
in  
1959  
and  
1981  
respective  
ly.  
This  
confusion  
is  
perpetuated  
when

policy-makers speak of threats from missile s to the United States or U.S

. interests, such as for war d-deployed troops or allied nations

. This again merges threats from very short-ran

ge  
mis  
sile  
s,  
of  
whi  
ch  
ther  
e  
are  
ma  
ny,  
with  
lon  
g-  
ran  
ge  
mis  
sile  
s,  
of  
whi  
ch  
ther  
e  
are  
few.

The

mor  
e  
acc  
urat  
e  
way  
to  
su  
mm  
ariz  
e  
exis  
ting  
glo  
bal  
balli  
stic  
mis  
sile  
cap  
abili  
ties  
is  
that  
,  
apa  
rt  
fro  
m

the  
five  
rec  
ogn  
ize  
d  
nuc  
lear  
-  
we  
apo  
n  
stat  
es,  
ther  
e  
are  
33  
nati  
ons  
with  
balli  
stic  
mis  
sile  
s,  
but  
the  
vas  
t  
maj  
orit  
y,  
or  
27  
nati  
ons  
,  
hav  
e  
onl  
y  
sho  
rt-  
ran  
ge  
mis  
sile  
s  
und  
er  
1,0  
00  
km.  
In  
fact  
, 22  
of

the  
33  
nati  
ons  
onl  
y  
hav  
e  
Scu  
ds  
or  
simi  
lar  
sho  
rt-  
ran  
ge  
mis  
sile  
s of  
300  
-km  
ran  
ge  
or  
less  
(Ira  
q  
offi  
ciall  
y  
has  
onl  
y  
sho  
rt-  
ran  
ge  
Scu  
ds  
but  
ma  
y  
hav  
e  
ass  
em  
blie  
s  
for  
ext  
end  
ed-  
ran  
ge  
Scu  
ds  
hid

den  
in  
the  
cou  
ntry  
)  
).  
Onl  
y  
six  
nati  
ons  
hav  
e  
me  
diu  
m-  
ran  
ge  
mis  
sile  
s  
ove  
r a  
100  
0-  
km  
ran  
ge  
(Isr  
ael,  
Sau  
di  
Ara  
bia,  
Indi  
a,  
Pak  
ista  
n,  
Nor  
th  
Kor  
ea  
and  
Iran  
)  
).  
Onl  
y  
four  
of  
the  
se  
nati  
ons  
hav  
e  
acti  
ve

programs for developing intermediate-range missile systems of over 3,000 kilometers in the next 10 years (India, Pakistan, North Korea and Iran).

wer  
,  
**Poore**  
**r**  
**Progra**  
**ms.**  
The  
nu  
mb  
er  
of  
cou

**Fe**



ntri  
es  
tryi  
ng  
or  
thre  
ate  
nin  
g to  
dev  
elo  
p  
lon  
g-  
ran  
ge  
balli  
stic  
mis  
sile  
has  
not  
cha  
nge  
d  
gre  
atly  
in  
15  
yea  
rs,  
and  
by  
so  
me  
indi  
cati  
ons  
ma  
y  
be  
con  
sid  
ere  
d  
sm  
alle  
r  
tha  
n in  
the  
pas  
t.  
The  
nati  
ons  
no  
w

attempting to perfect long-range missile systems are also smaller, poorer and less technologically advanced than were the nations with missile programs 15 years ago.

We

now worry primarily

about five nations, in addition to Russia and China: North Korea, Iran, Iraq, India and Pakistan. Fifteen years ago, North Korea was not a concern, but India, Brazil, Argentina, Egypt, South Africa

and  
per  
hap  
s  
Lib  
ya  
wer  
e  
all  
inv  
olv  
ed  
in  
pro  
gra  
ms  
to  
dev  
elo  
p  
lon  
g-  
ran  
ge  
mis  
sile  
s.  
All  
but  
Indi  
a  
hav  
e  
sinc  
e  
ter  
min  
ate  
d  
suc  
h  
effo  
rts.  
Isra  
el  
reta  
ins  
the  
cap  
abili  
ty  
to  
dev  
elo  
p  
lon  
g-  
ran

ge  
mis  
sile  
s,  
but  
is  
not  
con  
sid  
er a  
thre  
at  
to  
the  
Unit  
ed  
Stat  
es  
nor  
a  
likel  
y  
exp  
orte  
r of  
mis  
sile  
tec  
hno  
log  
y.

**Little Chance of Global Thermonuclear War.** Fifteen years ago, the ballistic missile threat confronting the United States was many times greater than it is today. I disagree with the NIE assessment that:

“...the probability that a WMD-armed missile will be used against US forces or interests is higher today than during most of the Cold War.” [\[xi\]](#)

Many times in the past 40 years, the citizens of the United States were deeply fearful that a global thermonuclear exchange would be triggered through deliberate confrontation, miscalculation or accident. Such an exchange would have destroyed the planet, not just the nation. While the possibility of an accidental or unauthorized launch of a Russian ballistic missile is increasing as economic and technological conditions deteriorate, the possibility of an all-out nuclear war is remote. While the threats we face are serious, they are orders of magnitude removed from the threats we confronted and thankfully escaped during the Cold War.

The NIE points out that the accurate, survivable and reliable missiles the former Soviet Union deployed in large numbers threatened “catastrophic, national-killing damage.” By contrast, the new missile threats, says the NIE, involve states with “considerably fewer missiles with less accuracy, yield, survivability, reliability and range-payload capability than the hostile strategic forces we have faced for 30 years.”

**Different, but not Unique.** Finally, I disagree with the NIE statement that:

“acquiring long-range ballistic missiles armed with WMD will enable weaker countries to do three things that they otherwise might not be able to do: deter, constrain, and harm the United States.” [\[xii\]](#)

This confuses weapons of mass destruction with delivery vehicles. A nation that announced it had placed a nuclear weapon in downtown Washington, D.C. would be just as able to deter, constrain and harm the United States as a nation that announced it had an ICBM with a nuclear warhead—perhaps more so. Nor would the existence of a missile defense system fundamentally alter this situation. No defense system currently envisioned would give military commanders the confidence they would need to assure the President that a missile launched at the United States would definitely be intercepted.

sho  
rt,  
the  
balli  
stic  
mis  
sile  
thre  
at  
is  
con  
fine  
d,  
limit  
ed  
and  
cha  
ngi  
ng  
rela  
tivel  
y  
slo  
wly.

**The  
De  
cre  
asi  
ng  
Glo  
bal  
Bal  
listi  
c  
Mis  
sile  
Thr  
eat**

**Thr  
eat**

**Sta  
tus  
(19  
85  
vs.  
200  
0)**

**Tre  
nds**

**ICB  
M**  
(>5  
500  
km)

52  
%  
dec  
rea  
se

do  
wn  
**IRB  
M**  
(30  
00-  
550  
0  
km)

99  
%  
dec  
rea  
se  
do

wn  
**MR  
BM**  
(10  
00-  
300  
0  
km)

3  
ne  
w  
nati  
ona  
l  
pro

grams  
up  
**SR**  
**BM**  
( $<1$   
000  
km)  
Static  
but  
declining  
as  
Scud  
inventories  
age  
.

down  
Number  
of  
nations  
with  
ballistic  
missile  
programs

Fewer,  
less  
advanced  
(8  
in  
mid-  
1980s,  
7  
today)  
down



Potentially hostile nations with ballistic missile programs

More (3 in mid-1980s, 5 today) up Potential damage to the United States from a missile attack

Vastly decreased

do wn

#### IV. Countering and Negating Missile Defenses

**Countermeasures.** The 1999 NIE provides the most elaborate unclassified intelligence description to-date on the steps nations are likely to take in response to deployment of U.S. theater and national missile defenses.

First, it notes:

“We assess that countries developing ballistic missiles would also develop various responses to US theater and national defenses. Russia and China each have developed numerous countermeasures and probably are willing to sell the requisite technologies.” [\[xiii\]](#)

This possibility should not be lightly dismissed. Over the decades the United States, Russia, the United Kingdom, France and China have all developed and deployed sophisticated countermeasures to overcome the defensive systems erected by their adversaries.

The inability to discriminate among decoys and overcome other likely counter-measures remains the Achilles’ heel of all currently envisioned ballistic missile defense systems. This is not a hypothetical contest. This is the experience of the existing nuclear arsenals when confronted by defensive systems.

For example, in March 1987 Lawrence Woodruff, then deputy undersecretary of defense for strategic and theater nuclear forces, described the contest between the offense and the defense to the House Armed Services Committee this way:

“The Soviets have been developing their Moscow [ABM] defenses for over ten years at a cost of billions of dollars. For much less expense we believe we can still penetrate these defenses with a small number of Minuteman missiles equipped with highly effective chaff and decoys. And if the Soviet should deploy more advanced or proliferated defenses, we have new penetration aids as counters under development...We are developing a new maneuvering re-entry vehicle that could evade interceptor missiles.” [\[xiv\]](#)

For these reasons, the Joints Chiefs of Staff were always supremely confident of our ability to overwhelm and penetrate the Moscow anti-ballistic missile systems.

Countries attempting to develop medium-or long-range missiles would not, however, have to rely on the purchase or transfer of counter-measure technology. The NIE lists eight distinct currently available technologies that such countries could employ:

“Many countries, such as North Korea, Iran and Iraq probably would rely initially on readily available technology—including separating RVs, spin-stabilized RVs, RV reorientation, radar absorbing material, booster fragmentation, low-power jammers, chaff, and simple (balloon) decoys—to develop penetration aids and countermeasures.” [\[xv\]](#)

The NIE further concludes that these countries could develop these countermeasures “by the time they flight test their missiles.” Moreover, foreign espionage and other collection efforts are likely to increase, says the NIE, increasing the likelihood that adversary nations could use critical information about U.S. defenses to improve their ability to overcome such defenses.

These “readily available technologies” could present severe problems for any missile interceptor. Again, these are not new technologies. An analysis prepared by the Office of Technology Assessment in 1988 confirmed that:

- “There are plausible decoy designs that would be very difficult to counter merely with passive infrared sensors in conjunction with radar.”

“It appears possible that chaff, if properly deployed with decoys, could be used to deny RV [re-entry vehicle] detection and more easily, deny RF [radio frequency] discrimination to the radar elements of a defense.”

“Whereas chaff would deny information to radar, aerosols would mask RVs and decoys from infrared sensors.” [\[xvi\]](#)

In a review of sensor systems under consideration in 1987, including the ground-launched Probe system and the satellite-based Space Surveillance and Tracking System (SSTS), (the predecessor of the Space-Based Infrared System now planned), the Defense Science Board also noted:

“Serious questions remain unanswered about the ability of the passive IR [infrared] sensors on Probe and SSTS to carry out discrimination against anything but the most primitive decoys and debris. In addition, the presence of cooled RVs would greatly reduce the range of proposed sensors.” [\[xvii\]](#)

These serious questions remain today. Some may believe that the United States has recently solved the discrimination problem. The first intercept test of a proposed national missile defense interceptor on October 2, 1999 contained a test element where the interceptor was to distinguish between the target and a decoy object. The interceptor vehicle, using “hit to kill” technology, successfully collided with and destroyed the target. In briefings before the test, however, Ballistic Missile Defense officials provided important qualifying details of the test. In particular, there were four critical test enhancements that made the test conditions not entirely realistic:

- 1.) The target followed a pre-programmed flight path to a designated position.
- 2.) The interceptor missile also flew to a pre-programmed position.
- 3.) A Global Positioning Satellite (GPS) receiver was placed on the target to send its position to ground control, and the necessary target location information was uploaded to a computer in the kill vehicle.
- 4.) The decoy released had a significantly different thermal signature than the target, making it easier for the sensors on the kill vehicle to distinguish between the objects.

Subsequent reports have made clear other problematic aspects of the test:

- 5.) Incorrect star maps loaded into the kill-vehicle’s computer prevented the vehicle from ascertaining its position once it had separated from the booster.
- 6.) Back-up inertial guidance systems led to inaccuracies in pointing the sensors used to locate the target.
- 7.) The sensors finally saw the large, bright balloon decoy, re-oriented, continued searching, and only by virtue of the proximity of the decoy to the target did they locate the cooler warhead that the kill vehicle had been programmed to recognize as the correct target.

The interceptor failed to hit its target in the second intercept test, on January 18, 2000. Initial reports blamed the failure on faulty sensors. The test again had to rely on the GPS transponder for

tracking information. The latest analysis is that a leak in the gas lines used to cool the sensors may have caused the failure. This raises the obvious question: If a hand-built, meticulously prepared interceptor fails from leaky tubing, how well are assembly-line production models likely to perform after sitting for years in the frozen Alaskan tundra?

For test purposes, there is nothing wrong with minimizing the number of variables in order to test key elements of the weapon system. It is vital, however, that test officials provide full disclosure of test limitations to policymakers at every stage of the process, lest test results be interpreted to have greater significance than, in fact, they do. The October test was much more a demonstration of two missiles intercepting each other than it was a test of intercepting an enemy missile under combat conditions. Until interceptor tests are conducted under real-world conditions in the presence of realistic decoys and countermeasures and independently assessed by objective evaluators, it will be impossible to ascertain the effectiveness of proposed ballistic missile defense systems.

**Forward-Based Threats.** As previous NIEs have reported (in 1993 and 1995), any new nation seeking to develop an ICBM faces formidable technological obstacles, including, but not limited to: propulsion technology; guidance and RV technology; and warhead construction (production of fissile material, design, miniaturization and weaponization). The 1993 NIE also reported that Iran, Iraq or North Korea would “significantly shorten their indigenous development timelines through the acquisition of foreign equipment and help.” [\[xviii\]](#)

Given the difficulties of ICBM development, it is important to consider other delivery systems that emerging proliferators might pursue instead. In this regard, the 1999 NIE does a significant service by discussing, in greater detail than previous unclassified assessments, the dangers posed by delivery vehicles other than ICBMs, including forward-based launchers (sea-based short- or medium-range ballistic missiles, cruise missiles, and aircraft) and covert delivery by ship, plane or land.

The assessment notes that these delivery methods, while not as prestigious as an ICBMs, are “of significant concern,” “might be the means of choice for terrorists,” and offer many attractive advantages over the development of long-range missiles, including:

- Would be significantly less expensive;
- Could be covertly developed and deployed;
- Would be more reliable than ICBMs;
- Would be more accurate than ICBMs over the next 15 years;
- Would be more effective for disseminating a biological warfare agent than a ballistic missile; and,
- Would negate missile defenses.

## **V. Implications for Deployment of Missile Defense Systems and Recommendations**

Policymakers should prudently conclude that, given current technological options and threat estimates, it appears very likely that deployment of a limited NMD system will result in other countries increasing the numbers of missiles they deploy and improving their countermeasure capabilities. In short, anti-missile deployments are likely to exacerbate the very problem that missile defense proponents hope to deter.

To ensure confidence in the reliability and effectiveness of any proposed ballistic missile defense, Congress should request an independent review of ABM technologies and tests, similar to a review conducted by the American Physical Society in 1984-85 on directed energy weapons. [\[xix\]](#) This would provide Congress with an objective assessment of available defense technologies, filtering out political agendas, contractor influences, and career considerations from this critical national security

decision. The National Academy of Sciences and the American Physical Society are two organizations that could be considered for this role.

For

the  
fore  
see  
abl  
e  
futu  
re,  
the  
mo  
st  
reli  
abl  
e  
met  
hod  
s  
for  
pre  
ven  
ting  
balli  
stic  
mis  
sile  
thre  
ats  
to  
the  
Unit  
ed  
Stat  
es  
rem  
ain  
agr  
ee  
me  
nts  
to  
pre  
ven  
t  
and  
red  
uce  
the  
thre  
at  
in  
the  
first  
pla  
ce;  
stro

ng  
con  
ven  
tion  
al  
forc  
es  
at  
the  
rea  
dy  
to  
det  
er  
the  
use  
of  
we  
apo  
ns  
of  
ma  
ss  
des  
truc  
tion  
;  
and  
cou  
nter  
forc  
e  
we  
apo  
ns  
to  
des  
troy  
mis  
sile  
s  
and  
we  
apo  
ns  
bef  
ore  
the  
y  
can  
be  
lau  
nch  
ed.  
Fin  
ally,  
the  
mo

st  
reli  
abl  
e  
ass  
ess  
me  
nts  
for  
pre  
dicti  
ng  
the  
futu  
re  
dev  
elo  
pm  
ent  
of  
the  
thre  
at  
will  
be  
tho  
se  
that  
are  
ind  
epe  
nde  
ntly  
con  
duc  
ted  
free  
fro  
m  
poli  
tical  
pre  
ssu  
res  
and  
in  
whi  
ch  
tec  
hni  
cal  
ass  
ess  
me  
nts  
are  
fully  
inte

grat  
ed  
with  
the  
bes  
t  
ava  
ilabl  
e  
eco  
no  
mic  
and  
poli  
tical  
ana  
lysi  
s.  
A  
bal  
anc  
ed  
and  
co  
mpr  
ehe  
nsiv  
e  
ass  
ess  
me  
nt  
of  
this  
kin  
d  
wo  
uld  
be  
unli  
kely  
to  
con  
clu  
de  
that  
the  
ove  
rall  
mis  
sile  
thre  
at  
to  
the  
US  
ho  
mel



and  
is  
incr  
eas  
ing  
sig  
nific  
antl  
y.

[i] All the unclassified summaries of the National Intelligence Estimates and other documents and reports referenced in this testimony can be found on-line at the web site of the Carnegie Non-Proliferation Project at: <[www.ceip.org/npp](http://www.ceip.org/npp)>.

[ii] Central Intelligence Agency, "Prospects for the Worldwide Development of Ballistic Missile Threats to the Continental United States," NIE 93-17.

[iii] House National Security Committee, Hearings on Ballistic Missile Defense, Statement for the Record by Richard N. Cooper, Chairman, National Intelligence Council for Hearings of 28 February 1996, "Emerging Missile Threats to North America during the Next 15 Years."

[iv] Robert Gates, Chairman, Independent Panel Review of "Emerging Missile Threats to North America During the Next 15 Years,"

[v] National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015."

[vi] Ibid.

[vii] Ibid.

[viii] Richard N. Cooper, Chairman, National Intelligence Council for Hearings of 28 February 1996, "Emerging Missile Threats to North America during the Next 15 Years."

[ix] Ibid.

[x] Robert Norris and Thomas Cochran, *Nuclear Weapons Databook, U.S.-USSR/Russian Strategic Offensive Nuclear Forces, 1945- 1996*, Natural Resources Defense Council, January 1997, pp. 13 and 46.

[xi] National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015."

[xii] Ibid.

[xiii] National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015."

[xiv] See, Staff Report on the Strategic Defense Initiative, Democratic Caucus of the U.S. House of Representatives, "Strategic Defense, Strategic Choices," May 1988, available at <[www.ceip.org/npp](http://www.ceip.org/npp)>.

[xv] Ibid.

[xvi] Ibid.

[xvii] Ibid.

[xviii] Central Intelligence Agency, "Prospects for the Worldwide Development of Ballistic Missile Threats to the Continental United States."

[xix] *Report to The American Physical Society of the study group on science and technology of directed energy weapons*, *Reviews of Modern Physics*, Volume 59, Number 3, Part II, July 1987, (not available online).

[xx] *The Jerusalem Post* reported development of an advanced Syrian modification of the Scud-C, but this report has not been confirmed by Western sources. See Arie O'Sullivan, "Syrian Super Scud Ready Soon—Source," *Jerusalem Post*, 16 September 1999.

[xxi] This program was reportedly initiated in autumn 1995 and is based on the Sky Bow II SAM.