

# *Gaiashield Group*

1400 Kra-Nur Drive, Burton, Michigan 48509



11/15/07

President George W. Bush  
600 Pennsylvania Ave NW  
Washington, DC 20500

Re: Three Executive Decisions

President Bush: Sir,

Over the course of the next 500 million years in the life of Earth our planet will be struck by approximately 100,000 asteroids. Most of these will be relatively small, 100 to 1,000 meters in diameter, millions of tons: only major city to nation killers. 1,000 or so will be over 1,000 meters, billions of tons and large enough to do catastrophic and potentially irrecoverable damage to the entire planet: call them global civilization killers. Of those, 10 will be over 10,000 meters, trillions of tons and on impact massive enough to bring our species to extinction. This is an old and ongoing process. All these asteroids are out there orbiting the sun, now. Nothing more needs to happen for them to eventually, randomly, strike Earth. As individual impact events they are all already in progress. By either definition this is an existential threat. Our current technological potential has fortunately evolved to a point that if we choose to do so we can deflect asteroids. Given a correspondingly evolved political will, we can effectively manage this threat.

**Decision One:** Should we endeavor to deflect the next asteroid on its way to strike Earth?

If no, perhaps you would choose for us to continue the gamble. Then, the only tool at our disposal to achieve a desirable result is hope. But hope alone is hardly a reliable survival tactic. We can only ever afford to hope for the best *after* we have done all we can to prepare for the worst. We only ever suffer the designs of chance once we have done all that we can do to fix the race, stack the deck, load the dice... cheat. We game the system. It's what we do.

If yes, then consider that all asteroid impact events are aperiodic and random both in their occasion and magnitude. From here and now we simply cannot derive any kind of rational expectation for either when the next event will occur or for how large it will be - until we see it coming. And that may be no more than decades before impact. Therefore...

**Decision Two:** Should we develop and build a means to successfully deflect the next asteroid on its way to strike Earth before we see it coming... or wait until after?

If 'after', then consider that not all the money in the world - not all the hubris, not all the resolve, not all the hope, not all the genius, not all the 11<sup>th</sup> hour road-to-hell-paving political good intentions mankind can bring to bear, altogether - will buy us more time.

If 'before', then 'before' begins... now! And we have all the time left in the world... Then, in order

to compel the delegation of a suitable agency, and a subsequent strategy in principles, and enable funding to implement tactical development, it would require the determination of a codified policy to expressly deflect asteroids that threaten Earth. Given that the next asteroid on its way to strike Earth may well result in an extinction level impact event, do so at any cost.

To inform this decision would require an Executive Strategic Study of what would be essential to the conduct of implementing a successful response in contrast to our present capabilities. To be relevant to the elements of this issue it should be conducted by a Soldier, a Scientist and a Statesman. A Soldier to keep us to what should be done. A Scientist to keep us to what can be done. And a Statesman to keep us from the occasional excesses of Soldiers and Scientists.

To highlight the need for a *strategic* study, consider the recent tactical conclusion drawn by NASA\* at the request of the Congress that the use of nuclear explosive devices would be 100 times more effective than the next best deflection alternative. It would be more than premature to infer from this conclusion that since the world already has a seemingly considerable stockpile of Cold War vintage nuclear weapons and intercontinental delivery systems that we thereby already have a standing, reliable means to effectively defend the planet from asteroid impact.

Substantially contributing to NASA's conclusion was a study generated by the Marshal Space Flight Center\*\* which determined that one unmanned Ares V heavy launch mission designed to convey a 6 megaton nuclear payload could effectively deflect up to a 500 meter threat. From this we can extrapolate that a 1,000 meter threat at 8 times the mass would require 8 such missions. For a 10,000 meter threat at 8,000 times the mass would require 8,000 missions conveying 10 times the world's nuclear arsenal as space capable (hard vacuum/Zero G/-240°C/solar radiation tolerant) nuclear mines... Subject to the coincidental availability of suitable launch windows.

Our science and technology have advantaged the evolution of our understanding of our place in the cosmos. A product of this emergent awareness is the recognition of an inherent vulnerability to some concurrent and seemingly exigent threats. Here, since it is a threat we can conceivably manage - and since it will always include the prospect for our extinction - which asteroid is the next asteroid on its way to strike Earth will always be the most important thing mankind will ever know. Deflecting it will always be the most important thing mankind will ever do. A dedicated policy to respond to this threat is coming... and more likely sooner than later.

**Decision Three:** Will you leave history's honorific of *"The man who took the lead, took the first enlightened step, set the global political precedent for defending mankind from asteroid impact"* (and its attendant Nobel) to some successor?

At your disposal and convenience in this issue,

A Million Miles A Day

R. Dale Brownfield

Gaiashield Group

\*Near-Earth Object Survey and Deflection Study:

Preliminary/Abridged Report <[http://www.nasa.gov/pdf/171331main\\_NEO\\_report\\_march07.pdf](http://www.nasa.gov/pdf/171331main_NEO_report_march07.pdf)>

Final/Full Report <[http://www.hq.nasa.gov/office/pao/FOIA/NEO\\_Analysis\\_Doc.pdf](http://www.hq.nasa.gov/office/pao/FOIA/NEO_Analysis_Doc.pdf)>

\*\*MSFC: Near Earth Object (NEO) Mitigation Options Using Exploration Technologies

<http://www.aero.org/conferences/planetarydefense/2007papers/S3-8--Adams-Paper.doc>

cc: VP Richard Cheney  
SecDef Robert Gates  
Dr. Condoleezza Rice  
ADM. Michael Mullen  
Gen. James Cartwright

Mr. Steven Hadley  
General Kevin P. Chilton  
Rep. Dana Rohrabacher  
Adm. Michael Griffin  
Mr. Rudy Giuliani

Sen. Fred Thompson  
Sen. John McCain  
Sen. Hillary Clinton  
Sen. Barack Obama  
Sen. John Edwards