

Gaiashield Group



08/15/03

President George W. Bush
The White House
1600 Pennsylvania Ave NW
Washington, DC 20500

Re: An Open Letter to Congress on Near Earth Objects: <<http://www.CongressNEOaction.org>>

Mr. President: Sir,

Recently you received a copy of an Open Letter to Congress proposing to increase funding for the detection of hazardous asteroids and comets from its current \$3.5 million per year to \$20 million per year. If the recommendation sounds to you to be out of proportion with what you might think it would take to Save the World and defend mankind from extinction - too much return on too little investment - you would be right. You don't get what you don't pay for. Given the scope and scale of the effort that would be required to develop a capability to effectively defend our planet from large asteroid impact and mitigate this threat, \$20 million is next to nothing. \$20 million would still require a great deal of miraculously good luck for the existing program to actually work as implied. Even 1% of GWP (matching the \$400 billion spent on Heroin and Cocaine each year) could not guarantee the capability to deal with the next large asteroid on its way to strike Earth. But at least *that* level of commitment would give us a reasonable fighting chance.

Although this funding recommendation would be no more than a Baby Step for Mankind, it is in the right direction and deserves at least your tacit support. However, some of the fundamental conclusions expressed in this letter are flawed. As such they misconstrue critical elements of this issue and serve to maintain a persistent and dangerous under-appreciation of the unique relevance of the next large asteroid impactor, the catastrophic potential of the next asteroid impact event and the dire character and imminence of the threat.

"Near Earth Objects (NEOs), pose a potentially devastating threat of collision with Earth,"

All large asteroids in our Solar System, whether they are NEO or Rogue or Main Belt asteroids, can only be perceived as a threat because collectively they constitute the candidate group for The Next Large Asteroid on its way to strike Earth (TNLA). As threats, all the rest are irrelevant. They will either never strike Earth at all or will do so only after TNLA. If we successfully deal with The Next Large Asteroid on its way to strike Earth and develop a standing Planetary Defense capability in the process, subsequent potential impactors loose much of their dire character as threats becoming only problematic - engineering challenges. If we fail to deal with TNLA, as a result our species could easily become extinct. All the rest are irrelevant.

"We know of no Near Earth Object currently on a collision course with Earth,"

No one has *detected* any asteroid or comet on its final terminal trajectory with Earth. However no one who has studied this issue contests the rational conclusion and absolute certainty that the Earth will be struck by a large asteroid again. TNLA is out there somewhere, now, orbiting the sun and on a course that will ultimately result in a collision with Earth. This die has been cast! Any asteroid that will ever strike Earth is on course to do so now even if that course includes the occasional asteroid/asteroid collision or two and is not clearly apparent as an Earth impactor... yet. Eros, the only asteroid we have visited, has 100,000 impact craters evidencing 100,000 discrete orbital paths. Our ability to 'know' the deterministic dynamics of the solar system in this regard is infinitesimal. We would have to detect and monitor all the tens of millions of asteroids of all sizes 24/7/52 to know if a NEO detected and plotted to be safe yesterday was still safe today. With the present 'catch and release' strategy our capability to 'know' if TNLA is in its terminal

trajectory is currently far more a matter of chance than any diligent strategic application of dedicated leading edge technology. \$20 million a year will only serve to slightly increase already extremely low odds.

"Based on current information, a crisis response to these potential threats is not warranted."

Overnight, this business will go from 'We Don't Know When' to '*INCOMING!*' Upon detecting TNLA this will have become something far more than a credible imminent threat and Clear and Present Danger. And yet nothing will have changed. Detecting TNLA does not cause TNLA. Our problem does not begin only when we *see* it coming. TNLA began with the formation of the solar system and will conclude with its impact on Earth. Since we cannot predict when that will occur and its detection will be at some arbitrary and also unknown point in time along TNLA's path to impact, whatever degree of urgency that is warranted for a post-detection response would also be warranted for a pre-detection response. The critical difference being that the odds for success will be far better in the second case not only because of the additional time for developing a response but also the lack of desperation, panic and chaos that will invariably accompany the first case. It is the *threat* that rises to the level of a dire Clear and Present Danger. Dire, not just because of the potential magnitude of the loss or the completely unpredictable and aperiodic nature of impact events making them perpetually imminent but primarily because we have no substantive reliable means to mitigate this threat in even its smallest manifestation. Until we have some standing capability to detect and interdict TNLA how can we consider ourselves in anything less than a crisis deserving of an appropriate response.

"Although the annual probability of a large NEO impact on Earth is relatively small,"

The annual probability for a large NEO impact one year 65 million years ago was also relatively small. Statistically speaking, all annual probabilities are the same - all past large asteroid impacts have occurred in a year where the 'annual probability' was 'relatively small'. The only conceivable relevant probability that could be relatively *larger* would be one expressed by a greater period of time: the millennial probability for large NEO impact would be 1000 times greater. In that the ratio between any given period of time and the probability are always the same this conclusion is tautological and has no information in it at all - statistical sophistry. It merely sounds scientific and comforting. Yet this conclusion is held by scientists studying this issue and constitutes the underlying rationale for their assessment of the threat and subsequent prescription for a strategy of only responding after detection. If as a threat assessment this conclusion is false and misleading, and it is further understood that meaningful impact probabilities for TNLA can only be derived from its direct observation, then the only strategic perspective we can afford is to always regard the arrival of TNLA as imminent and respond accordingly. We hope for the best but prepare for the worst. Preparing for the best while ignoring the worst has never been a reliable survival trait. Could you safely go home tonight and tell your wife that you have bet the lives of her children and her grandchildren on the strength of 'relatively small' and the contingent ability of \$20 million a year - at NASA - to ensure their wellbeing?

"with the commitment of modest resources, NEO impacts can likely be predicted..."

Predicting the next large asteroid impact can only proceed from detecting the next large incoming asteroid from among the millions of asteroids of all sizes in our solar system. 'Modest resources' are not going to afford any reliable detection capability. At any given time current modest resources only afford a sporadic Earth based optical observation to search a very small percentage of the 50 trillion-trillion cubic miles of space that asteroids travel in. Even an exponential increase in current capabilities would fail to enhance the present strategy to anything approaching a military-grade level of surveillance. With every NEO traveling a million miles a day in its own discrete orbit and Earth spinning on its axis in its orbit around the sun, for a few hours a night a few nights a month, at the dark of the moon if it's not cloudy, it is all we can do to count the occasional NEO if it streaks across some amateur astronomer's field of view. It is a problem of spatial geometry. We must get off of and away from ground zero to achieve any degree of effective real-time surveillance. Counting all the asteroids that will never strike Earth only serves to mitigate the perception of the threat. To actually mitigate the threat itself we must develop a comprehensive standing capability to find TNLA well before it finds us. Of all the threats mankind has ever faced this one will never go away.

" ... and, with adequate warning, steps taken to prevent them."

'Steps' would translate to invent a Global Planetary Defense. After detection: delegate some agency to select, design, develop, test, train, deploy and execute some way of stopping The Next Large Asteroid on its way to strike Earth. The mass, velocity, and ETA of TNLA would define the capability required for interdiction. The incidental resources and extemporaneous abilities available to build this interdiction capability, flatfooted from Earth, with whatever ad hoc prototype technology that may be in NASA's pork barrel, with the world crippled by desperation, panic and chaos, in whatever time we have left at the time of detection, would in turn define how many decades constitute 'adequate warning'. Which should come first Chicken Little or the 'Egg'? If we begin taking steps now adequate warning could be defined in a matter days and not decades. Just think 'Chicxulub' and let's consider ourselves already adequately warned!

"such impacts can not only threaten the survival of our nation, but even that of civilization itself."

... *and* the survival of our species? The impact at Chicxulub is estimated to have released the equivalent of 100 million Megatons of TNT - 1.3 Hiroshima bombs for every man, woman and child on the planet. Somehow (really good luck) we did survive that one but most species did not. Since in Congress funding any program must be justified by some necessity, and only fear ever defines necessity, then in order to get money from Congress you must scare them to some degree. Perhaps there are valid concerns in this scientific community that too much fear would shift the strategic authority here from NASA to the DoD?

The necessity for any Executive assessment of the underlying justification for initially funding NASA's Spaceguard Survey (that large NEOs pose a degree of hazard to Earth) has been occluded by appearing to be already fundable in the course of NASA's general scientific mission. This expedience has effectively denied this issue its Executive level due diligence *as a threat* avoiding both a clear policy determination and delegation of its management as an issue of global security. Waiting for the completed survey results in 2008 may be offered as a plausible scientific protocol however successful results will only verify estimates of the large NEO population. They can simply find any 1000 large NEOs that will never strike Earth, declare victory, and go home. Finding TNLA is not a stated mission objective. Unless they do happen to find it incidentally, the results of this survey will give you little more relevant information on the nature of this threat than what you have in hand now. Every year put off waiting for the results of this study is another year we loose in preparing for TNLA and another year we must add to our definition of good luck.

Scientists discovered this problem and there is undoubtedly much more they can contribute to its solution. However with the fate of the world in the balance why have Astronomers, Astrobiologists and Minor Planetologists been left with the unfamiliar responsibility for making critical strategic and tactical threat assessments when there are so many Admirals, Generals and strategic think-tanks eminently qualified to make such assessments at our disposal. After we detect TNLA will not be an occasion for the application of any scientific methods - there will be no opportunity to learn from our mistakes. Failure will simply not be an option. It would be far more effective to task a security/martial mind-set to deal with any threat, even though it comes from space, than to expect a scientist to ever think and respond like a soldier.

Sooner or later - perhaps tomorrow - some astronomer somewhere in the world will finally detect The Next Large Asteroid on its way to strike Earth. Within days his detection would likely be confirmed by NASA's Spaceguard Survey and this conformation, along with the precise date of its impact, would be sent to the Administrator of NASA. He will then take it to the Vice President who will walk it over to the Oval Office. Upon receiving confirmed notice that a large asteroid is on its way to strike Earth, no matter how far away it is, the first call you or any President of the United States is going to make will be to your Department of Defense. And later Planetary Defense will have become Military business.

Planetary Defense as military business 'later' would be a desperate and fearful thing with much pointing of fingers and gnashing of teeth and real last-minute politicking about who did not intelligently connect the dots. Driven by concerns over the questionable efficacy of the few ad hoc extemporaneous nuclear options still only imaginably available, and which one-shot you will choose to take in order to save mankind from Extinction by NEO. Plans for Solar Sails, Mass Drivers or crashing into it with multimillion-ton spaceships will not even make it into the Situation Room. However all prayers and any good luck will be welcome. On the other hand, Planetary Defense as military business 'sooner' would involve much preparation, training and vigilance with far less faith in prayers or good luck and far more reliance in diligent strategic foresight.

Appreciating the imminence of this threat is a matter of basic deductive, possibly courageous, common sense. With the discovery of the crater at Chicxulub and its catastrophic implications the credibility of this threat has been clear for more than a decade. Although this scientific community contends that in the event of inadequate warning we could simply 'blow it up with a nuke', even for a small asteroid this would be something that in its implementation would be far easier said than done and in its effectiveness a marginal response at best. Certainly nothing any nation in the world is actually *prepared* to do. Ask STRATCOM. The imminence of a threat is determined by the potential for its occurrence and can be quantified by the magnitude of the loss it can generate and qualified by the ability to mitigate it. With next to nothing in our ability to defend the planet and everything there is to loose and if 'We Do Not Know When' can only safely be regarded as 'Now', the threshold of a Clear and Present Danger has easily been met if not surpassed. With the appropriate strategic perspective, and if we begin to prepare now, we can imaginably deal with this threat even in its largest manifestation. There is no longer any reason to pretend TNLA does not exist.

As a credible imminent threat and global security issue this cannot continue to be dismissed in Congress by some \$20 million drop in NASA's pork barrel every year. Nor can we wait for scientists to provide you with politically irrefutable evidence before you set the world on a course to defend itself from The Next Large Asteroid on its way to strike Earth. As President of the United States and its Commander in Chief, responsible not only for the security of the nation but as we are the most technologically advanced nation in the world, you are by default also singularly responsible for the security of the planet! You need to

rigorously address this issue through the eyes of your Joint Chiefs of Staff sooner rather than later. It is nothing less than *your* duty to declare The Next Large Asteroid on its way to strike Earth a dire Clear and Present Danger. Prime Minister Blair said it: "because destiny put you in this place in history, in this moment in time and the task is yours to do."

The Sky Is Falling Now!

Militarize Planetary Defense Now!

At your disposal and convenience,
R. Dale Brownfield

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cc:

Prime Minister Tony Blair
V. President Richard Cheney
Hon. Colin L. Powell
Hon. Donald H. Rumsfeld

Hon. Tom Ridge
Gen Richard B. Myers
Adm James O. Ellis Jr.
Maj Gen John M. Urias

Adm James R. Hogg
Paul Wolfowitz
Dr. John H. Marburger
Hon. Sean O'Keefe