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**IN THE UNITED STATES DISTRICT COURT
DISTRICT OF HAWAII**

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LUIS SANCHO, et al.,)	Civil No. CV08-00136 HG
)	
Plaintiffs,)	AFFIDAVIT OF WALTER L.
)	WAGNER IN SUPPORT OF
vs.)	OPPOSITION TO “MOTION
)	FOR LEAVE TO FILE BRIEF
US DEPARTMENT OF ENERGY,)	AMICUS CURIAE”
et al.,)	
)	
Defendants.)	Hon. Helen Gillmor
_____)	

**AFFIDAVIT OF WALTER L. WAGNER IN SUPPORT OF OPPOSITION TO
“MOTION FOR LEAVE TO FILE BRIEF AMICUS CURIAE”**

I, Walter L. Wagner, after first being duly sworn, affirm, state and declare under penalty of perjury of the laws of the State of Hawaii as follows:

1. I have reviewed the originally submitted "*Motion For Leave To File Brief Amicus Curiae*" and the "*Brief Amicus Curiae In Support of Federal Defendants of Sheldon Glashow, Frank Wilczek and Richard Wilson*" and its "*Biographical Addendum*" submitted herein, which was apparently rejected for filing by the clerk of this Court as having been submitted by Martin S. Kaufman, an attorney who is not a member of the State Bar of Hawaii as required by this Court's admission to practice requirements. It is my understanding that Mr. Kaufman has contacted a local member of the Hawaii Bar and that the brief will be resubmitted by that local member.

2. I make note that there are no affidavits, sworn or otherwise, submitted in support of the motion, and that none of the alleged *amici* have signed any documents in support of the motion.

3. The brief itself is riddled with factual inaccuracies and false assertions of fact, and fails to address the actual issues before the Court, and instead addresses a speculative issue with false allegations of fact.

4. Some of those glaringly false allegations of act follow:

A) On page 5, first sentence, it alleges that the LHC is a linear collider. The LHC is not a linear collider; it is a cyclotronic collider which allows the atomic nuclei [Hydrogen or Lead] to travel in a circle [27 kilometers in circumference], repeating that cycle over and over as the particle speed is increased to nearly the speed of light. Hence, it is a cyclotron¹, not a linear accelerator.

B) On page 11 it falsely asserts that the “LHC does not accelerate nuclei, but only accelerates and causes the collisions of elementary particles – protons and antiprotons.” This is demonstrably false for a number of reasons:

i) First, the LHC would accelerate protons only, and collide protons into protons. It is not designed or intended to collide protons with antiprotons, and physically cannot. While the collider at Fermilab does collide protons with antiprotons at much lower energy than the LHC, the collider at RHIC, and the proposal to do such much-higher-energy

¹We use similar, but much smaller diameter, cyclotrons on a daily basis in nuclear medicine, in which we collide protons with Oxygen-18 nuclei [a stable minor constituent of Oxygen, which is mostly Oxygen-16]. This is a nuclear reaction which produces short-lived Fluorine-18, a radioactive material that undergoes a nuclear decay by emission of positrons. We inject the Fluorine-18, usually attached to sugar molecules, to trace metabolic pathways in the human body for disease detection. The positrons that are emitted betray the location of the fluoridated sugar molecules. The sugar will tend to locate in cancerous lesions, for example, allowing us to detect such small lesions before they grow large. More than half of all such procedures utilize cyclotron-produced radioisotopes. The rest utilize nuclear-reactor-produced radioisotopes.

collisions at the LHC, involves proton-proton collisions, **NOT** proton-antiproton collisions.

ii) Second, by definition, the protons are the nuclei of Hydrogen² atoms, and hence it is an oxymoron to assert that the LHC would not accelerate nuclei.

iii) Third, the LHC is specifically designed to accelerate the nuclei of Lead atoms. This would not take place at the same time as the acceleration of Hydrogen nuclei, but instead would be in a separate run. Many of the experimental chambers have been designed with the intention of observing the aftermath of Lead-Lead collisions. Indeed, it is in those collisions that it is believed that strangelet production would take place, not in the proton-proton [Hydrogen-Hydrogen] collisions.

C) It is falsely alleged on page 12, top paragraph, that CERN management commissioned “a high level independent committee (LSAG) to imagine what could go wrong.” It further falsely alleges that that committee reported its conclusions in **2003**.

In fact, the impetus for formation of the LSAG [**LHC Safety Assessment Group**] was my communication with CERN’s management,

² That is also the source of the protons – namely Hydrogen gas, which is then stripped of its electrons, or ionized, preparatory to injection into the pre-accelerators.

and it was not formed until late in 2007³, and its report [LSAG Report] was not published until circa June, 2008; only two months ago. Still further, it is not an “*independent committee*” but rather composed entirely of either current CERN employees or past CERN employees, which is one of the subjects of its criticism. Indeed, the LSAG Report was put together with as much thought about having the facts correct as the alleged *amici* put into the instant originally submitted *Amicus Curiae* brief. The Report itself is currently undergoing analysis by members of my group, which analysis will be submitted for publication later this year.

5. In addition to such glaring errors of fact, less obvious errors are likewise replete throughout, and which impact the conclusions of the alleged *amici*.

6. On page 7 of the brief it falsely asserts that the “properly raised” and “legitimate” concerns about the LHC “have been raised, studied, and answered decisively by scientists ...” While some scientists may have reached a decision, that is by no means a unanimous consensus of decision. For example, I attach herewith as my Exhibit “A” an interview conducted by science journalist Alan Gillis entitled “*Professor Roessler*

³ As discussed in my prior affidavits, the LSAG was formed in response to the safety criticisms I submitted in 2007 to Mr. Aymar, Director General at CERN.

Takes on the LHC” with Dr. Otto E. Roessler, a German scientist of excellent reputation with some 300 science publications to his credit. While the interview is lengthy, and goes into some technical detail, his concluding comments on page 7, top paragraph, are noteworthy, and read:

“They have this nice argument. ‘We all have children. Would we do this experiment if we didn’t believe we were safe?’ But if they are ready to sacrifice their families, they are still not allowed to do it with the planet.”

7. In the interview itself, it becomes clear that Dr. Roessler has found serious flaws in the LSAG Report, and that its conclusions of safety are not substantiated by a thoughtful analysis. In particular, as a scientific expert on the theory of black holes with numerous publications thereon, he dramatically disagrees with the alleged *amici* assertion, found at the top of page 10 of their brief, that even if the LHC could create micro black holes [mBH], that “such a black hole would be so tiny that it would evaporate instantly.”

7. Contrarily, here is what Dr. Roessler says, in part, about mBH in his paper entitled “Seven Reasons for Demanding an LHC Safety Conference”. That paper was only recently presented July 24-30, 2008, in Baden-Baden, Germany, to the *International Institute for Advanced Studies*:

“Black holes *cannot evaporate* because their horizon is effectively infinitely far away in spacetime according to my new

interpretation of the Schwarzschild metric. ... Mini black holes grow *exponentially* rather than linearly inside the earth ... Hence, the time needed by a resident mini black hole to eat the earth is maximally shortened – perhaps down to “50 months” ... Only man-made ones are ‘symmetrically generated’ [made at rest relative to earth] and hence dangerous. ...”

[bracketed insert added for clarity]

8. After setting forth seven arguments as to why the LHC must not be operated with respect to the black hole risk, he concludes as follows:

“In order to exclude the possibility that human-made mini black holes will endanger the earth, it will be necessary to disprove the first of these 7 points, or if this is not possible, the second, and so forth. Until this has been accomplished, *no one* can give the “green light” to the LCH crossing the 2 TeV barrier, as is currently planned ...”

9. In addition to the micro black hole risk, Dr. Roessler also addressed another risk, found on page 5 of the interview, in which he discusses a “Bosenova⁴” risk of explosion. Superficially it would appear that I would not have legal standing to seek to prevent such risk, as it would simply be the equivalent of a large Hydrogen bomb explosion and produce only a “local catastrophe” which would affect only Geneva and the surrounding countryside. However, if the explosion were sufficiently large, it could create a large enough crater that the resultant nuclear fallout would

⁴ A theoretical consideration involving a Bose-Einstein condensate which could conceivably create a nova-type explosion, hence a “Bosenova”.

trigger a “global nuclear winter” which would have environmental consequences for me here in Hawaii. As Dr. Roessler mentions, however, such “local catastrophe if occurring would inadvertently protect the planet at large [from the LHC itself, which would be destroyed in the explosion]. This Bosenova risk is only recently arisen, and is also not discussed in the LSAG Report.

10. Nor is Dr. Roessler alone in his assessment that the LSAG Report is faulty. Attached herewith is my Exhibit “C” which is a paper submitted for scientific publication by Dr. R. Plaga, and hosted on arXiv under the category of High Energy Physics [hep-ph]. This paper is highly technical, and again is attached not with the expectation that this Court will understand all of its reasoning, but rather to show that well-researched scientific papers exist which cast doubt upon the conclusions of the LSAG Report. Specifically, that paper on page 8 concludes:

“At the present stage of knowledge, there is a definite risk from mBH production at colliders. This final conclusion differs completely from the one drawn by G & M [Giddings and Mangano, the LSAG Report primary authors]. This is not because of any disagreement over the purely scientific content of their excellent paper. Rather, the difference is the sole result of employing an alternative plausible scenario for the physics of mBHs and including parameter regions in which mBHs are not expected to be well described by the semiclassical scenario in the safety analysis.” [bracketed material added for clarity; underlining added for emphasis]

11. Still yet another risk, comparable to the risk analyzed in the 1940s and 1950s pertaining to ignition of the Nitrogen gas in our atmosphere referenced by the alleged *amici*, has been identified but not yet thoroughly analyzed, pertaining to the “beam-dump”, and likewise not mentioned in the LSAG Report. The “beam-dump” is made of carbon [graphite], and is designed for dumping the proton-beam or Lead-beam at the conclusion of experiments. The large kinetic energy of the beam, equivalent to a medium-sized chemical bomb carried on fighter aircraft, has to be safely disposed of at the conclusion of each experiment, and the “beam-dump” is designed to absorb that energy, and heat up, but not melt, safely disposing of the energy of the beam. This is effected by a beam “spreader” which diverts the beam into an “e” shape that is smeared across the face of the graphite block, allowing for the energy to be relatively evenly dispersed. The risk analysis not examined in the LSAG Report, or any other LHC safety report, pertains to the potential for inadvertent failure of the beam spreader to divert the beam, and divert the concentration of energy.

12. I am attaching herewith as my Exhibit “B” a copy of the original August, 1946 22-page report prepared by Dr. Konopinski, Dr. Marvin, and Dr. Teller [Konopiniski Report] pertaining to the risk of detonation of the

atmospheric Nitrogen by inadvertence through either a fission bomb ["A-bomb"] or fusion bomb ["Hydrogen-bomb"]. The report was declassified in June, 1979 only a few weeks after I began working in federal nuclear safety commencing May, 1979. The report itself is technically complex, and not submitted with the expectation that this Court will understand all of the logic underlying it. We know, with after-the-fact retrospection, that such nuclear detonations have been shown to be safe with respect to detonation of our relatively thin atmosphere. Instead, the report is submitted to show that such calculations are involved, difficult, time-consuming, and a necessity whenever high-energies/temperatures and potential fusion materials are the mix.

13. I draw this Court's attention in particular to the concluding paragraph in which Dr. Teller, Dr. Marvin and Dr. Konopinski warn as follows:

"Even if the reaction [fusion of Nitrogen nuclei] is stopped within a sphere of a few hundred meters in radius, the resultant earth-shock and the radioactive contamination of the atmosphere might become catastrophic on a world-wide scale.

One may conclude that the arguments of this paper make it unreasonable to expect that the $N + N$ [Nitrogen fusing with Nitrogen] reaction could propagate. An unlimited propagation [ignition of the entire atmosphere] is even less likely. However, the complexity of the argument and the absence of satisfactory

experimental foundations makes further work on the subject highly desirable.”

[bracketed material added for clarity, underlining added for emphasis]

14. The beam-dump of the LHC utilizes material that is even lighter than Nitrogen (which has 7 protons and 7 neutrons), namely Carbon (6 protons and 6 neutrons), yet far more compact [solid, versus gaseous Nitrogen in our atmosphere], and should there be a failure of the beam-spreader magnet, the internal temperature would possibly exceed the fusion ignition temperature for Carbon, with a possible “unlimited propagation” until all of the Carbon had been used up. Accordingly, a complex analysis as to whether the beam-dump has an uncontrolled unlimited propagation fusion potential of the Carbon in the beam-dump, should the beam-spreader fail to function properly, appears to be warranted – an analysis that would involve detailed calculations and likely the use of experimental data which still remains militarily classified.

15. Again, superficially it would appear that I do not have standing to raise that issue, as calculations show that the energy release from an uncontrolled fusion reaction of the entire beam-dump graphite block would be not much more than a medium-sized thermonuclear bomb, and would likely only destroy Geneva and the surrounding countryside, and not

directly impact me in Hawaii. However, again, the resultant “nuclear winter” could impact me, as would the global societal ‘fallout’.

16. Neither Dr. Roessler nor Dr. Plaga address the risk associated with the LHC possibly creating strangelets. As stated previously, I have investigated strangelet theory extensively over the past ten years, since filing an earlier suit due to the concerns that the lower energy RHIC might create strangelets. The fact that the RHIC did not obtain sufficient energy to create sufficient numbers of strange quarks so as to allow for the formation of strangelets does not preclude such from happening at the much higher energy LHC, which might well cross such energy threshold and produce a sufficient number of strange quarks to do the job.

17. The alleged *amici* seem to acknowledge that the LHC might be capable of creating strangelets, and certainly there are published papers anticipating strangelet searches at the ATLAS detector. On pages 10 and 11 it reads that the strangelet disaster scenario would be credible “if strangelets exist (which is conceivable) ...”. In fact, extensive searches have already been conducted for strangelets, including in moon dust [brought back by Apollo astronauts, and years later examined for strangelets], in earth, in the atmosphere, and in lower-energy particle-accelerator debris. All past searches have thus far been unsuccessful at

detecting strangelets. They might not exist in nature, or we might not have adequately searched for them.

18. Presently, the AMS-2⁵ is scheduled for launch in 2009, designed in part to search for strangelets in the cosmic rays. Likewise, strangelet searches are planned at the ATLAS detector, based in part on the belief that strangelets would be harmless.

19. Should strangelets be detected in nature in earth's vicinity or on earth, such detection would establish their benign character as it pertains to their fusion potential. However, it is not known that they have such benign character if they are created for the first time in a particle collider, if not existent naturally. This is best detailed by the alleged *amici* themselves, who on page 11 of their brief claim that it is "unlikely" that they would form reasonably stable lumps, or that it is "unlikely" that they are negatively charged. No calculations whatsoever are given as to how they reach their opinion that it is "unlikely" that they would not be dangerous.

20. In fact, a review of the scientific literature shows that strangelet theory is still being developed, and that strangelets might be positively charged, neutral, or negatively charged; that they might be stable in small

⁵ **Alpha Magnetic Spectrometer**, an automated cosmic ray detector designed for attachment to the exterior of the ISS.

lumps, or only mildly radioactive (and thus of sufficient life-time to fuse with normal atoms, grow larger, and become fully stable); and that they might even have a fusion potential with normal low-mass atoms [such as Helium, in great abundance at the LHC] even if positively charged. All of those possibilities also exist, leaving us with the distinct possibility that if strangelets do not exist in nature, and we create them for the very first time at the LHC, they might escape and engage in a runaway fusion reaction.

21. There is neither experimental evidence, nor theoretical proof, that such would not occur, not even from the alleged *amici*. Indeed, to the contrary, theorists such as Dr. Sancho believe that it is exceedingly likely, not “unlikely”, that such strangelets would not stop fusing normal atoms to themselves until they ran out of fuel, which would not be until the earth were entirely consumed.

22. In addition to the AMS-2 scheduled for launch in 2009, the GLAST satellite was recently⁶ flawlessly launched by NASA, and has completed its 60-day checkout and initial calibration with flying colors. It is now operational for data-acquisition, and will be capable of detecting “Hawking Radiation” as predicted by Stephen Hawking might exist and originate from the Milky Way Halo. Detection of such evidence would

support the alleged *amici* supposition that mBHs would instantly evaporate via “Hawking Radiation”. Absence of detection would strongly suggest that “Hawking Radiation” does not exist, and that mBHs do not evaporate. The current data acquisition and analysis mode of the GLAST is expected to last 2-3 years.

23. Based on the excessive number of fallacious statements and other errors in the *Amicus Curiae* brief of the alleged *amici*, and based on the extensive errors in the LSAG Report detailed by Dr. Roessler, Dr. Plaga, myself and others, one is forced to the conclusion that the adverse scenarios detailed by plaintiffs and their affiants remain as a distinct possibility, warranting immediate injunctive relief.

24. However, the alleged *amici* appear to miss the mark in their brief. As correctly identified on page 2 of their brief, bottom paragraph, the “core of Plaintiff’s complaint alleges that the United States and other defendants violated the National Environmental Policy Act (“NEPA”) ...”

25. Nowhere in the body of the *Amicus Curiae* brief, however, is that issue addressed. Instead, the brief attempts to assert that there are no risks, that the alleged *amici* are infallible as to their assertions of fact, and that the plaintiffs are mistaken thereon. However, as is amply

⁶ Launched by NASA on a Delta-II rocket on June 11, 2008 into a 350 mile circular orbit.

demonstrated in this affidavit, it is the alleged *amici* who assert numerous demonstrably false allegations of fact, and who present no factual evidence that counters the evidence presented by Dr. Roessler, Dr. Plaga, Dr. Sancho and myself, including numerous scientific papers challenging the conclusions of defendant CERN's in-house "LSAG Report".

26. Indeed, the alleged *amici* do not even present affidavits or other documents which they themselves sign, leaving one to wonder whether they are even actually represented by Mr. Kaufman, or whether instead he's taken it upon himself to purport to represent the alleged *amici* when in fact no such representation actually exists.

27. Dr. Plaga and others have developed recommendations for a methodology to determine safety. That methodology should, of course, include compliance with NEPA requirements. The NEPA hearings should also include an analysis of the beam-dump explosion potential, the Bosenova explosion potential, the proof of existence of benign strangelets in nature prior to creating them in the laboratory, the proof of existence of "Hawking Radiation" prior to creating micro Black Holes in the laboratory, etc.

28. In that the *Amicus Curiae* brief that might be filed by local Hawaii counsel retained on behalf of the alleged *amici* might be different in

page numbering, material, etc, from the one originally submitted but rejected for filing, I am attaching herewith as my Exhibit "D" a copy of the submitted but rejected brief initially tendered to the Court for filing by Mr. Kaufman, as a source of referral for this Court with respect to my comments thereon, and the pages referenced thereto, in this affidavit.

28. Further, your affiant sayeth naught.

Dated: August 15, 2008

Walter L. Wagner

Subscribed and sworn to before me
this 15th day of August, 2008

Notary Public, State of Hawaii

EXHIBIT "A"
Roessler Interview

EXHIBIT “B”
Konopinski Report

EXHIBIT "C"
R. Plaga Paper

EXHIBIT “D”
Original *Amicus Curiae* Submission Rejected by the Clerk