

DCN: 4928

JUL 19 2005

June 10 2005

Received

To: James V. Hansen, Member of Base Realignment and Closure Commission
From: Citizens Against Hearing Damage, CAHD
Re: Base Closure Request

Your Commission should reconsider the bases selected for closure, because of information not supplied to you about Oceana Naval Air Station in Virginia Beach, Virginia. The base exposes heavily populated areas around the base to noise levels that exceeds the US Environmental Protection Agency, EPA, and World Health Organization limits for hearing damage. With the arrival of the new louder jets, many more adults and children are exposed to noise that damages hearing according to scientifically validated noise exposure limits. To verify for yourself that EPA hearing damage limits are being exceeded, you can contact Wiley Laboratories, Inc that did the noise level studies around the base for the July 2002 Draft Environmental Impact Statement, DEIS, and have them calculate EPA noise figures from their data. Remember that EPA noise regulations apply to private property, not Navy noise standards or OSHA industrial noise standards which are higher and apply to the workplace and permits more hearing damage. So these jets are violating the law that applies to private property.

People are upset about Oceana, which is illustrated by the organization Citizens Concerned About Jet Noise, CCAJN, having five thousand members. There are over 2000 people currently suing the Navy in this area for disruption to their environment due to the jets, which is currently in court. Environmental problems such as jet noise, hearing damage, Carbon Monoxide and Ozone are opposed by CCAJN. Carbon Monoxide increases hearing damage from loud noises. The proposed Super Hornets in the DEIS is three times louder and has 10 times the sound energy as current aircraft at Oceana, which is like comparing a 50 watt light bulb to a 500 watt light bulb. The Super Hornet is rated at 117 DB at 1000 feet flying altitude which is only 3 DB below the level at which sound causes pain. There has also been a 200 percent increase in asthma in children in recent years, which is an Ozone affect. The Oceana base produces hydrocarbon pollution from the jets exhaust that when acted on by sunlight produces ozone. Ozone, when breathe by people, produces respiratory damage. This area exceeds both the State and Federal limits for Ozone, and the Oceana base is the main contributor to the problem. Many people are having various lung problems in this area when Ozone levels are high on sunny warm days. Yet the Navy command in this area still doesn't want to admit that the base with the new jets is unfit for this area. (See attached information on "Oceana Air Station Hearing Damage")

The Navy does not own enough property around the base to protect the people from the newer, very much louder and more polluting jets than the original jets housed there in the past. The base is not suitable for the modern jets. The base needs to be closed as it is violating pollution laws and hearing damage laws, so causing respiratory problems and damaging the hearing of people and children around the base. We ask you to act responsibly and close the base. If you don't close the base, the BRAC commission members may be personally sued by the people whose health is injured because of the lack of proper action on your part. It is your job to uphold the laws and protect the people from injury by the base.

CC Attorneys

Date: December 23, 2002

From: Citizens Against Hearing Damage

To: Charles W. Walker, Head, Environmental Planning Branch, Dept. of the Navy, Norfolk

Subject: Oceana Air Station Hearing Damage

Noise levels from jets at Oceana Air Station have been determined to cause hearing damage. Hearing damage caused by noise is a serious problem and many companies and the military are paying millions for their employees with hearing damage that could have been prevented. See <http://www.cdc.gov/niosh/hpworkrel.html> To prevent hearing damage the Environmental Protection Agency (EPA) and the National Institute Of Safety And Health (NIOSH), and World Health Organization had done extensive medical research on hearing damage to develop a noise exposure limit that would prevent hearing loss. NIOSH is the federal agency responsible for conducting research and making recommendations to prevent work-related injury.

Based on medical and scientific research, they made noise exposure limits to protect hearing from permanent damage. The EPA noise exposure limits will protect 96 percent of the people from hearing damage, while the NIOSH noise exposure limits will only protect 50 percent of the people. The National Academy of Science and the World Health Organization have also adopted the same noise exposure limits as the EPA. See <http://www.epa.gov/history/topics/noise/01.htm> The NIOSH are workplace exposure limits, which apparently allows more risk of damage for a salaried employee. Even the Navy has adopted noise exposure limits below the NIOSH limits for its own personnel. See http://www-nehc.med.navy.mil/downloads/ih/IHFOM_CH5.pdf The Occupational Safety Health Administration (OSHA) noise exposure limits have been criticized by experts as not protecting hearing, and have not changed in 20 years to keep pace with current scientific research. Since we are not receiving a Navy salary and the noise is in our environment, the EPA noise exposure limits apply for hearing protection.

All noise exposure limits to protect from hearing damage are given in two parts. One part is the loudness of the noise measured in decibels, dB, and the other part is the duration in one day that the noise lasts in time units, such as seconds, minutes or hours. According to NIOSH, the noise exposure limits are: "Exposure duration for which noise at this level becomes hazardous." and "Exposure at and above this level are considered hazardous." See <http://www.cdc.gov/niosh/98-126a.html>. If noise exposure is kept below these limits and then 50 percent of the people will lose 30 percent (2 dB) of hearing after 40 years due to noise. Under EPA only four percent of the people will lose 70 percent (5 dB) of hearing after 40 years due to the noise. The EPA protects more people, but hearing loss is greater. A comparison of noise exposure limits is at <http://www.nonoise.org/hearing/exposure/standardschart.htm>

The chart below gives Noise Exposure Limits to protect from high hearing losses.

dB Noise Level	EPA Noise Exposure Limits	NOISH Noise Exposure Limits
70 dB	24 hours	
76 dB	6 hours	
79 dB	3 hours	
82 dB	1 hour 30 minutes	
85 dB	45 minutes	8 hours
88 dB	23 minutes	4 hours
94 dB	6 minutes	1 hour
97 dB	3 minutes	30 minutes
102 db	53 seconds	9 minutes 27 seconds
107 dB	16.7 seconds	2 minutes 59seconds
117 dB	1.7 seconds	17.7 seconds

The Noise Exposure Limits are calculated from the logarithmic equation: For EPA: $T=1440/2^{((L-70)/3)}$ For NIOSH: $T=480/2^{((L-85)/3)}$ where L is the dB level. T is the maximum exposure time in minutes at this dB level to reach hazardous levels. The following website gives a good introduction to hearing protection exposure levels and calculations:
http://ceae.colorado.edu/~muehleis/classes/aren4020/handouts/lecture8/noise_levels.pdf

Noise exposure limits our equivalent. For example a three minutes exposure to noise at 97 dB is the equivalent to 70 dB for 24 hours. To determine if a person has reached a hazardous exposure when exposed to two different noise levels, the exposure time is converted into a fraction and added. For example one and half minutes at 97 dB produces a fraction of 1/2, and 12 hours at 70 dB produces a fraction also of 1/2. So 1/2 is added to the other 1/2 to equal 1, therefore the sounds together produce a hazardous exposure. Likewise many different noise levels can be converted to fractions and added together, and if the total is 1 or greater than the sounds together have produces a hazardous exposure for high hearing losses. Their are integrating sound meters or dosimeters that do this process automatically.

The Navy uses average sound in the Draft Environmental Impact Statement (DEIS) to discuss noise zones. **But average noise levels is not how noise is scientifically evaluated for hazardous exposure for high hearing loss.**

The Sound Exposure Level (SEL) is what is used to determine if the Noise Exposure Limits have reached hazardous levels for high hearing loss. The SEL is a measure of the equivalent sound level over a one second interval.

There is shocking data hidden in Appendix Table C-3 page 3 of DEIS on exposure of schools to the F/18-E/F noise. That table gives Sound Exposure Level (SEL) for a single jet flying over. For Plaza Elementary School at location S10, the level of the SEL is 110.8 dB for one second for each F/18-E/F jet. The EPA exposure limit for a 110.8 dB it is a short 6.9 seconds in a day. **Therefore after only six jet exposures, the exposure limit has been reached and any additional noise becomes hazardous for high hearing losses to the children!** During busy times, planes arrive and practice at Oceana about every 30 seconds for hours. This exposure time could easily be exceeded by children's recess, outside gym classes and after school athletic practice, not to mention going home and living in a high noise area. **The F/18-E/F undeniably poses a serious hazard for high hearing losses to the children.**

Most jets produce over a 140 dB near them, but the F/18-E/F even produces powerful sound at a distance. According to Table 4-20 of EIS, the F/18-E/F jet produces a sound exposure level of 117 dB for one second on departure at 1000 feet altitude. According to the DEIS the jets fly under 1000 feet over many areas including schools. Pilots can also operate their jets at higher noise levels than navy estimates. The EPA exposure limit for a 117 dB noise is only 1.8 seconds in a day. **So anyone experiencing more than one jet in a day would exceed hazardous levels to their hearing!**

Besides the damage to hearing issues, it is known that noise over a 120 dB exceeds the pain threshold for the average person, so the noise actually begins to cause pain. Some people start to experience pain at 100 dB. Low-flying F/18-E/F could destroy the tourist business in Virginia Beach, as a painful noise experience could stop someone from coming again, and give Virginia Beach a reputation as a tourist area to avoid.

Even under the NIOSH noise exposure limit, that protects only 50 percent of employees, allows only 17.7 seconds exposure in the day for a 117 dB. It would take only 18 jets to reach hazardous levels to hearing. Yet according to Table 4-4 of DEIS, under Alternative 1, Oceana would average 517 jets operations per day, so there are plenty of jet operations to reach hazardous levels to hearing.

An outlying field (OLF) would not decrease noise around Oceana. According to page 4-31 of DEIS, "The decrease in noise exposure if a new OLF were constructed under ALT 1, 4A, 4B, or 6 would occur primarily within the noise zones around NALF Fentress."

In the DEIS the Navy predicts that the walls of a school or home should drop the outside noise 20 dB if windows are closed, and 15 dB if windows are open. Even if 20 dB is subtracted from the 117 dB of the F/18-E/F, that still leaves 97 dB inside for which the EPA noise exposure limit is 3 minutes in a day. If the windows are open, then the EPA noise exposure limit is only 53 seconds. So even being inside the school or home will significantly contribute to exceeding the noise exposure limits. All this adds up to serious risks for reaching hazardous levels for high hearing losses to the children and adults.

Where loud noises exist, any responsible employer would have actual measurements done based on the scientific methods of the evaluating hearing damage potential. Although the Navy takes great precaution to protect its own personnel from hearing damage for which it would have to pay disability, it has completely ignored the public. The Navy clearly has decided to conceal the hearing damage issues in the DEIS, obviously because if the facts are known the public would not allow the jets to come here. In Appendix section B.3.4 on page B-18, titled "Hearing Loss", they first quote an old study from 1985 which states: "Studies on community hearing loss from exposure to aircraft flyovers near airports showed that there is no danger, under normal circumstance, of hearing loss due to aircraft noise (Newman and Beattie 1985)". To compare 1985 jets to an F/18-E/F is nonsense, as there have been several new models and each new model of jet has produced more noise. The most shocking and convicting statement is the conclusion to this section; "Because it is unlikely that airport neighbors will remain outside their homes 24 hours per day for extended periods of time, there is little possibility of hearing loss below a day-night average sound level of 75 dB and this level is extremely conservative" Any expert in hearing protection knows that the day-night average has nothing to do with evaluating for hazardous exposure limits for hearing loss. The truth is that even a few seconds of jet noise in a day can exceed the hazardous exposure limits.

The Navy is exploiting public ignorance on how the short loud jet noises contribute to exceeding the exposure limits. The Navy obviously is aware of how noise is evaluated for hearing damage but has chosen misleading deceptive statements instead of facts. For example, two jet noise exposures of 117db for one second exceeds the exposure limit for high hearing loss for a day. If the day night average (DNL) is calculated for these two exposures by equation $DNL = 10 \log_{10} \left(\frac{1}{24} \sum_{i=1}^n 10^{L_i/10} \right)$. The result is only 70 dB but has exceeded the noise exposure limit for high hearing loss. A 117 dB sound has 47 times the sound energy as a 70 dB sound, which is like comparing a 50-watt light bulb to a 2350-watt light bulb.

The Navy gives tables of equivalent noise in the DEIS in Appendix Table C-2. The equivalent noise (Leq) can not be used to accurately determine hearing related exposure because it is also an average level, and high levels considerably decrease exposure time as previously shown. But because the Navy's Leq is given over a 9-hour period, its peaks are not as diluted by averaging as the DNL longer period of 24 hours. But even the Leq shows a serious problem. The equation to convert Leq to EPA noise exposure limit is $LEL = Leq - 10 \log_{10} \left(\frac{9}{24} \right)$. The Leq for Food Lion at London Bridge Shopping Center is 79.9 dB, which is 10 times over the EPA daily exposure limit for only a 9-hour period, which doesn't even include the noise in the other 15 hours of the day. So after 53 minutes people in that area are at risk, and this is from the average level so actual time is much less. Lynnhaven Mall at 77.2 dB is 4 times over the exposure limit in the 9 hours. So even Navy data using average levels shows a serious problem.

Actual integrating sound meter and dosimeter readings were taken in a residential area about one mile from the Oceana airfield near the corner of Virginia Beach Boulevard and Sykes Avenue. The meter readings showed the noise exceeded the hazardous exposure level of the EPA within only 20 minutes! So there is already a serious problem now! During that time, peak noise levels frequently seen were 104 dB to 116 dB for the current jets.

During that time a single jet with a peak reading of 104.8 dB contributed 17.8 percent to reaching the maximum exposure permitted in a day. Thus it would take only 6 jets at this common reading to reach hazardous levels. Since the F/18-E/F is even louder, it would reach hazardous levels for high hearing losses even sooner.

Another consideration is that medical research has discovered that carbon monoxide increases the amount of hearing damage caused by noise. See <http://chppm-www.apgea.army.mil/hcp/facqs.aspx> Under Alternative 1 according to the DEIS Table 4-34, Oceana would produce huge amounts of odorless but dangerous carbon monoxide (CO) gas of 3794.2 tons per year mostly from the F/18-E/F jets, which is 223% more than in the year 2000. Any amount over 100 tons exceeds the de minimus amount so requires approval from the Virginia Department of Environmental Quality (VDEQ). Even though the increase is 1703.3 tons which far exceeds 100 tons, the Navy failed to seek approval from the VDEQ in the DEIS. The VDEQ could not justify such an approval because the VDEQ's Carbon Monoxide monitor sites are now very close to exceeding the pollution limit at times. In addition to the pollution problem, this indicates that even the EPA noise exposure limits may be too high to protect the public from hearing damage due to the Carbon Monoxide effect.

In conclusion, the DEIS failed to describe the environmental impact of the F/18-E/F on hearing loss. The public, parents of children, and school administrators need to know how much time they can spend outside before risking damage to their hearing. There already is a very serious problem in Virginia Beach in regard to exceeding noise exposure limits that are hazardous for high hearing loss, so any effort to bring any jets into this area should not be considered. Instead the Navy should move enough existing jets out of Oceana to lower noise to safe levels. People will have the potential for high hearing loss if this continues.

c.c. Jet noise litigant attorneys

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Re: Base Closure Request

Your Commission should reconsider the bases selected for closure, because of information not supplied to you about Oceana Naval Air Station in Virginia Beach, Virginia. The base exposes heavily populated areas around the base to noise levels that exceeds the US Environmental Protection Agency, EPA, and World Health Organization limits for hearing damage. With the arrival of the new louder jets, many more adults and children are exposed to noise that damages hearing according to scientifically validated noise exposure limits. To verify for yourself that EPA hearing damage limits are being exceeded, you can contact Wiley Laboratories, Inc that did the noise level studies around the base for the July 2002 Draft Environmental Impact Statement, DEIS, and have them calculate EPA noise figures from their data. Remember that EPA noise regulations apply to private property, not Navy noise standards or OSHA industrial noise standards which are higher and apply to the workplace and permits more hearing damage. So these jets are violating the law that applies to private property.

People are upset about Oceana, which is illustrated by the organization Citizens Concerned About Jet Noise, CCAJN, having five thousand members. There are over 2000 people currently suing the Navy in this area for disruption to their environment due to the jets, which is currently in court. Environmental problems such as jet noise, hearing damage, Carbon Monoxide and Ozone are opposed by CCAJN. Carbon Monoxide increases hearing damage from loud noises. The proposed Super Hornets in the DEIS is three times louder and has 10 times the sound energy as current aircraft at Oceana, which is like comparing a 50 watt light bulb to a 500 watt light bulb. The Super Hornet is rated at 117 DB at 1000 feet flying altitude which is only 3 DB below the level at which sound causes pain. There has also been a 200 percent increase in asthma in children in recent years, which is an Ozone affect. The Oceana base produces hydrocarbon pollution from the jets exhaust that when acted on by sunlight produces ozone. Ozone, when breathe by people, produces respiratory damage. This area exceeds both the State and Federal limits for Ozone, and the Oceana base is the main contributor to the problem. Many people are having various lung problems in this area when Ozone levels are high on sunny warm days. Yet the Navy command in this area still doesn't want to admit that the base with the new jets is unfit for this area. (See attached information on "Oceana Air Station Hearing Damage")

The Navy does not own enough property around the base to protect the people from the newer, very much louder and more polluting jets than the original jets housed there in the past. The base is not suitable for the modern jets. The base needs to be closed as it is violating pollution laws and hearing damage laws, so causing respiratory problems and damaging the hearing of people and children around the base. We ask you to act responsibly and close the base. If you don't close the base, the BRAC commission members may be personally sued by the people whose health is injured because of the lack of proper action on your part. It is your job to uphold the laws and protect the people from injury by the base.

CC Attorneys

Date: December 23, 2002

From: Citizens Against Hearing Damage

To: Charles W. Walker, Head, Environmental Planning Branch, Dept. of the Navy, Norfolk

Subject: Oceana Air Station Hearing Damage

Noise levels from jets at Oceana Air Station have been determined to cause hearing damage. Hearing damage caused by noise is a serious problem and many companies and the military are paying millions for their employees with hearing damage that could have been prevented. See <http://www.cdc.gov/niosh/hpworkrel.html> To prevent hearing damage the Environmental Protection Agency (EPA) and the National Institute Of Safety And Health (NIOSH), and World Health Organization had done extensive medical research on hearing damage to develop a noise exposure limit that would prevent hearing loss. NIOSH is the federal agency responsible for conducting research and making recommendations to prevent work-related injury.

Based on medical and scientific research, they made noise exposure limits to protect hearing from permanent damage. The EPA noise exposure limits will protect 96 percent of the people from hearing damage, while the NIOSH noise exposure limits will only protect 50 percent of the people. The National Academy of Science and the World Health Organization have also adopted the same noise exposure limits as the EPA. See <http://www.epa.gov/history/topics/noise/01.htm> The NIOSH are workplace exposure limits, which apparently allows more risk of damage for a salaried employee. Even the Navy has adopted noise exposure limits below the NIOSH limits for its own personnel. See http://www-nehc.med.navy.mil/downloads/ih/IHFOM_CH5.pdf The Occupational Safety Health Administration (OSHA) noise exposure limits have been criticized by experts as not protecting hearing, and have not changed in 20 years to keep pace with current scientific research. Since we are not receiving a Navy salary and the noise is in our environment, the EPA noise exposure limits apply for hearing protection.

All noise exposure limits to protect from hearing damage are given in two parts. One part is the loudness of the noise measured in decibels, dB, and the other part is the duration in one day that the noise lasts in time units, such as seconds, minutes or hours. According to NIOSH, the noise exposure limits are: "Exposure duration for which noise at this level becomes hazardous." and "Exposure at and above this level are considered hazardous." See <http://www.cdc.gov/niosh/98-126a.html>. If noise exposure is kept below these limits and then 50 percent of the people will lose 30 percent (2 dB) of hearing after 40 years due to noise. Under EPA only four percent of the people will lose 70 percent (5 dB) of hearing after 40 years due to the noise. The EPA protects more people, but hearing loss is greater. A comparison of noise exposure limits is at <http://www.nonoise.org/hearing/exposure/standardschart.htm>

The chart below gives Noise Exposure Limits to protect from high hearing losses.

dB Noise Level	EPA Noise Exposure Limits	NOISH Noise Exposure Limits
70 dB	24 hours	
76 dB	6 hours	
79 dB	3 hours	
82 dB	1hour 30 minutes	
85 dB	45 minutes	8 hours
88 dB	23 minutes	4 hours
94 dB	6 minutes	1 hour
97 dB	3 minutes	30 minutes
102 db	53 seconds	9 minutes 27 seconds
107 dB	16.7 seconds	2 minutes 59seconds
117 dB	1.7 seconds	17.7 seconds

The Noise Exposure Limits are calculated from the logarithmic equation: For EPA: $T=1440/2^{(L-70)/3}$ For NOISH: $T=480/2^{(L-85)/3}$ where L is the dB level. T is the maximum exposure time in minutes at this dB level to reach hazardous levels. The following website gives a good introduction to hearing protection exposure levels and calculations:
http://ceae.colorado.edu/~muehleis/classes/aren4020/handouts/lecture8/noise_levels.pdf

Noise exposure limits our equivalent. For example a three minutes exposure to noise at 97 dB is the equivalent to 70 dB for 24 hours. To determine if a person has reached a hazardous exposure when exposed to two different noise levels, the exposure time is converted into a fraction and added. For example one and half minutes at 97 dB produces a fraction of 1/2, and 12 hours at 70 dB produces a fraction also of 1/2. So 1/2 is added to the other 1/2 to equal 1, therefore the sounds together produce a hazardous exposure. Likewise many different noise levels can be converted to fractions and added together, and if the total is 1 or greater than the sounds together have produces a hazardous exposure for high hearing losses. Their are integrating sound meters or dosimeters that do this process automatically.

The Navy uses average sound in the Draft Environmental Impact Statement (DEIS) to discuss noise zones. **But average noise levels is not how noise is scientifically evaluated for hazardous exposure for high hearing loss.**

The Sound Exposure Level (SEL) is what is used to determine if the Noise Exposure Limits have reached hazardous levels for high hearing loss. The SEL is a measure of the equivalent sound level over a one second interval.

There is shocking data hidden in Appendix Table C-3 page 3 of DEIS on exposure of schools to the F/18-E/F noise. That table gives Sound Exposure Level (SEL) for a single jet flying over. For Plaza Elementary School at location S10, the level of the SEL is 110.8 dB for one second for each F/18-E/F jet. The EPA exposure limit for a 110.8 dB it is a short 6.9 seconds in a day. **Therefore after only six jet exposures, the exposure limit has been reached and any additional noise becomes hazardous for high hearing losses to the children!** During busy times, planes arrive and practice at Oceana about every 30 seconds for hours. This exposure time could easily be exceeded by children's recess, outside gym classes and after school athletic practice, not to mention going home and living in a high noise area. **The F/18-E/F undeniably poses a serious hazard for high hearing losses to the children.**

Most jets produce over a 140 dB near them, but the F/18-E/F even produces powerful sound at a distance. According to Table 4-20 of EIS, the F/18-E/F jet produces a sound exposure level of 117 dB for one second on departure at 1000 feet altitude. According to the DEIS the jets fly under 1000 feet over many areas including schools. Pilots can also operate their jets at higher noise levels than navy estimates. The EPA exposure limit for a 117 dB noise is only 1.8 seconds in a day. **So anyone experiencing more than one jet in a day would exceed hazardous levels to their hearing!**

Besides the damage to hearing issues, it is known that noise over a 120 dB exceeds the pain threshold for the average person, so the noise actually begins to cause pain. Some people start to experience pain at 100 dB. Low-flying F/18-E/F could destroy the tourist business in Virginia Beach, as a painful noise experience could stop someone from coming again, and give Virginia Beach a reputation as a tourist area to avoid.

Even under the NIOSH noise exposure limit, that protects only 50 percent of employees, allows only 17.7 seconds exposure in the day for a 117 dB. It would take only 18 jets to reach hazardous levels to hearing. Yet according to Table 4-4 of DEIS, under Alternative 1, Oceana would average 517 jets operations per day, so there are plenty of jet operations to reach hazardous levels to hearing.

An outlying field (OLF) would not decrease noise around Oceana. According to page 4-31 of DEIS, "The decrease in noise exposure if a new OLF were constructed under ALT 1, 4A, 4B, or 6 would occur primarily within the noise zones around NALF Fentress."

In the DEIS the Navy predicts that the walls of a school or home should drop the outside noise 20 dB if windows are closed, and 15 dB if windows are open. Even if 20 dB is subtracted from the 117 dB of the F/18-E/F, that still leaves 97 dB inside for which the EPA noise exposure limit is 3 minutes in a day. If the windows are open, then the EPA noise exposure limit is only 53 seconds. So even being inside the school or home will significantly contribute to exceeding the noise exposure limits. All this adds up to serious risks for reaching hazardous levels for high hearing losses to the children and adults.

Where loud noises exist, any responsible employer would have actual measurements done based on the scientific methods of the evaluating hearing damage potential. Although the Navy takes great precaution to protect its own personnel from hearing damage for which it would have to pay disability, it has completely ignored the public. The Navy clearly has decided to conceal the hearing damage issues in the DEIS, obviously because if the facts are known the public would not allow the jets to come here. In Appendix section B.3.4 on page B-18, titled "Hearing Loss", they first quote an old study from 1985 which states: "Studies on community hearing loss from exposure to aircraft flyovers near airports showed that there is no danger, under normal circumstance, of hearing loss due to aircraft noise (Newman and Beattie 1985)". To compare 1985 jets to an F/18-E/F is nonsense, as there have been several new models and each new model of jet has produced more noise. The most shocking and convicting statement is the conclusion to this section; "Because it is unlikely that airport neighbors will remain outside their homes 24 hours per day for extended periods of time, there is little possibility of hearing loss below a day-night average sound level of 75 dB and this level is extremely conservative" Any expert in hearing protection knows that the day-night average has nothing to do with evaluating for hazardous exposure limits for hearing loss. The truth is that even a few seconds of jet noise in a day can exceed the hazardous exposure limits.

The Navy is exploiting public ignorance on how the short loud jet noises contribute to exceeding the exposure limits. The Navy obviously is aware of how noise is evaluated for hearing damage but has chosen misleading deceptive statements instead of facts. For example, two jet noise exposures of 117db for one second exceeds the exposure limit for high hearing loss for a day. If the day night average (DNL) is calculated for these two exposures by equation $DNL = 10 \log_{10} \left(\frac{1}{24} (10^{117/10} + 10^{117/10}) \right)$ the result is only 70 dB but has exceeded the noise exposure limit for high hearing loss. A 117 dB sound has 47 times the sound energy as a 70 dB sound, which is like comparing a 50-watt light bulb to a 2350-watt light bulb.

The Navy gives tables of equivalent noise in the DEIS in Appendix Table C-2. The equivalent noise (Leq) can not be used to accurately determine hearing related exposure because it is also an average level, and high levels considerably decrease exposure time as previously shown. But because the Navy's Leq is given over a 9-hour period, its peaks are not as diluted by averaging as the DNL longer period of 24 hours. But even the Leq shows a serious problem. The equation to convert Leq to EPA noise exposure limit is $LEL = Leq - 10 \log_{10} \left(\frac{9}{24} \right)$. The Leq for Food Lion at London Bridge Shopping Center is 79.9 dB, which is 10 times over the EPA daily exposure limit for only a 9-hour period, which doesn't even include the noise in the other 15 hours of the day. So after 53 minutes people in that area are at risk, and this is from the average level so actual time is much less. Lynnhaven Mall at 77.2 dB is 4 times over the exposure limit in the 9 hours. So even Navy data using average levels shows a serious problem.

Actual integrating sound meter and dosimeter readings were taken in a residential area about one mile from the Oceana airfield near the corner of Virginia Beach Boulevard and Sykes Avenue. The meter readings showed the noise exceeded the hazardous exposure level of the EPA within only 20 minutes! So there is already a serious problem now! During that time, peak noise levels frequently seen were 104 dB to 116 dB for the current jets.

During that time a single jet with a peak reading of 104.8 dB contributed 17.8 percent to reaching the maximum exposure permitted in a day. Thus it would take only 6 jets at this common reading to reach hazardous levels. Since the F/18-E/F is even louder, it would reach hazardous levels for high hearing losses even sooner.

Another consideration is that medical research has discovered that carbon monoxide increases the amount of hearing damage caused by noise. See <http://chppm-www.apgea.army.mil/hcp/facqs.aspx> Under Alternative 1 according to the DEIS Table 4-34, Oceana would produce huge amounts of odorless but dangerous carbon monoxide (CO) gas of 3794.2 tons per year mostly from the F/18-E/F jets, which is 223% more than in the year 2000. Any amount over 100 tons exceeds the de minimus amount so requires approval from the Virginia Department of Environmental Quality (VDEQ). Even though the increase is 1703.3 tons which far exceeds 100 tons, the Navy failed to seek approval from the VDEQ in the DEIS. The VDEQ could not justify such an approval because the VDEQ's Carbon Monoxide monitor sites are now very close to exceeding the pollution limit at times. In addition to the pollution problem, this indicates that even the EPA noise exposure limits may be too high to protect the public from hearing damage due to the Carbon Monoxide effect.

In conclusion, the DEIS failed to describe the environmental impact of the F/18-E/F on hearing loss. The public, parents of children, and school administrators need to know how much time they can spend outside before risking damage to their hearing. There already is a very serious problem in Virginia Beach in regard to exceeding noise exposure limits that are hazardous for high hearing loss, so any effort to bring any jets into this area should not be considered. Instead the Navy should move enough existing jets out of Oceana to lower noise to safe levels. People will have the potential for high hearing loss if this continues.

c.c. Jet noise litigant attorneys

JUL 19 2005

June 10 2005

Received

To: James H. Bilbray, Member of Base Realignment and Closure Commission
From: Citizens Against Hearing Damage, CAHD
Re: Base Closure Request

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CC Attorneys

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In conclusion, the DEIS failed to describe the environmental impact of the F/18-E/F on hearing loss. **The public, parents of children, and school administrators need to know how much time they can spend outside before risking damage to their hearing. There already is a very serious problem in Virginia Beach in regard to exceeding noise exposure limits that are hazardous for high hearing loss, so any effort to bring any jets into this area should not be considered. Instead the Navy should move enough existing jets out of Oceana to lower noise to safe levels. People will have the potential for high hearing loss if this continues.**

c.c. Jet noise litigant attorneys

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June 10 2005

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Re: Base Closure Request

Your Commission should reconsider the bases selected for closure, because of information not supplied to you about Oceana Naval Air Station in Virginia Beach, Virginia. The base exposes heavily populated areas around the base to noise levels that exceeds the US Environmental Protection Agency, EPA, and World Health Organization limits for hearing damage. With the arrival of the new louder jets, many more adults and children are exposed to noise that damages hearing according to scientifically validated noise exposure limits. To verify for yourself that EPA hearing damage limits are being exceeded, you can contact Wiley Laboratories, Inc that did the noise level studies around the base for the July 2002 Draft Environmental Impact Statement, DEIS, and have them calculate EPA noise figures from their data. Remember that EPA noise regulations apply to private property, not Navy noise standards or OSHA industrial noise standards which are higher and apply to the workplace and permits more hearing damage. So these jets are violating the law that applies to private property.

People are upset about Oceana, which is illustrated by the organization Citizens Concerned About Jet Noise, CCAJN, having five thousand members. There are over 2000 people currently suing the Navy in this area for disruption to their environment due to the jets, which is currently in court. Environmental problems such as jet noise, hearing damage, Carbon Monoxide and Ozone are opposed by CCAJN. Carbon Monoxide increases hearing damage from loud noises. The proposed Super Hornets in the DEIS is three times louder and has 10 times the sound energy as current aircraft at Oceana, which is like comparing a 50 watt light bulb to a 500 watt light bulb. The Super Hornet is rated at 117 DB at 1000 feet flying altitude which is only 3 DB below the level at which sound causes pain. There has also been a 200 percent increase in asthma in children in recent years, which is an Ozone affect. The Oceana base produces hydrocarbon pollution from the jets exhaust that when acted on by sunlight produces ozone. Ozone, when breathe by people, produces respiratory damage. This area exceeds both the State and Federal limits for Ozone, and the Oceana base is the main contributor to the problem. Many people are having various lung problems in this area when Ozone levels are high on sunny warm days. Yet the Navy command in this area still doesn't want to admit that the base with the new jets is unfit for this area. (See attached information on "Oceana Air Station Hearing Damage")

The Navy does not own enough property around the base to protect the people from the newer, very much louder and more polluting jets than the original jets housed there in the past. The base is not suitable for the modern jets. The base needs to be closed as it is violating pollution laws and hearing damage laws, so causing respiratory problems and damaging the hearing of people and children around the base. We ask you to act responsibly and close the base. If you don't close the base, the BRAC commission members may be personally sued by the people whose health is injured because of the lack of proper action on your part. It is your job to uphold the laws and protect the people from injury by the base.

CC Attorneys

Date: December 23, 2002

From: Citizens Against Hearing Damage

To: Charles W. Walker, Head, Environmental Planning Branch, Dept. of the Navy, Norfolk

Subject: Oceana Air Station Hearing Damage

Noise levels from jets at Oceana Air Station have been determined to cause hearing damage. Hearing damage caused by noise is a serious problem and many companies and the military are paying millions for their employees with hearing damage that could have been prevented. See <http://www.cdc.gov/niosh/hpworkrel.html> To prevent hearing damage the Environmental Protection Agency (EPA) and the National Institute Of Safety And Health (NIOSH), and World Health Organization had done extensive medical research on hearing damage to develop a noise exposure limit that would prevent hearing loss. NIOSH is the federal agency responsible for conducting research and making recommendations to prevent work-related injury.

Based on medical and scientific research, they made noise exposure limits to protect hearing from permanent damage. The EPA noise exposure limits will protect 96 percent of the people from hearing damage, while the NIOSH noise exposure limits will only protect 50 percent of the people. The National Academy of Science and the World Health Organization have also adopted the same noise exposure limits as the EPA. See <http://www.epa.gov/history/topics/noise/01.htm> The NIOSH are workplace exposure limits, which apparently allows more risk of damage for a salaried employee. Even the Navy has adopted noise exposure limits below the NIOSH limits for its own personnel. See http://www-nehc.med.navy.mil/downloads/ih/IHFOM_CH5.pdf The Occupational Safety Health Administration (OSHA) noise exposure limits have been criticized by experts as not protecting hearing, and have not changed in 20 years to keep pace with current scientific research. Since we are not receiving a Navy salary and the noise is in our environment, the EPA noise exposure limits apply for hearing protection.

All noise exposure limits to protect from hearing damage are given in two parts. One part is the loudness of the noise measured in decibels, dB, and the other part is the duration in one day that the noise lasts in time units, such as seconds, minutes or hours. According to NIOSH, the noise exposure limits are: "Exposure duration for which noise at this level becomes hazardous." and "Exposure at and above this level are considered hazardous." See <http://www.cdc.gov/niosh/98-126a.html>. If noise exposure is kept below these limits and then 50 percent of the people will lose 30 percent (2 dB) of hearing after 40 years due to noise. Under EPA only four percent of the people will lose 70 percent (5 dB) of hearing after 40 years due to the noise. The EPA protects more people, but hearing loss is greater. A comparison of noise exposure limits is at <http://www.nonoise.org/hearing/exposure/standardschart.htm>

The chart below gives Noise Exposure Limits to protect from high hearing losses.

dB Noise Level	EPA Noise Exposure Limits	NOISH Noise Exposure Limits
70 dB	24 hours	
76 dB	6 hours	
79 dB	3 hours	
82 dB	1 hour 30 minutes	
85 dB	45 minutes	8 hours
88 dB	23 minutes	4 hours
94 dB	6 minutes	1 hour
97 dB	3 minutes	30 minutes
102 db	53 seconds	9 minutes 27 seconds
107 dB	16.7 seconds	2 minutes 59seconds
117 dB	1.7 seconds	17.7 seconds

The Noise Exposure Limits are calculated from the logarithmic equation: For EPA: $T=1440/2^{((L-70)/3)}$ For NOISH: $T=480/2^{((L-85)/3)}$ where L is the dB level. T is the maximum exposure time in minutes at this dB level to reach hazardous levels. The following website gives a good introduction to hearing protection exposure levels and calculations:
http://ceae.colorado.edu/~muehleis/classes/aren4020/handouts/lecture8/noise_levels.pdf

Noise exposure limits our equivalent. For example a three minutes exposure to noise at 97 dB is the equivalent to 70 dB for 24 hours. To determine if a person has reached a hazardous exposure when exposed to two different noise levels, the exposure time is converted into a fraction and added. For example one and half minutes at 97 dB produces a fraction of 1/2, and 12 hours at 70 dB produces a fraction also of 1/2. So 1/2 is added to the other 1/2 to equal 1, therefore the sounds together produce a hazardous exposure. Likewise many different noise levels can be converted to fractions and added together, and if the total is 1 or greater than the sounds together have produces a hazardous exposure for high hearing losses. Their are integrating sound meters or dosimeters that do this process automatically.

The Navy uses average sound in the Draft Environmental Impact Statement (DEIS) to discuss noise zones. **But average noise levels is not how noise is scientifically evaluated for hazardous exposure for high hearing loss.**

The Sound Exposure Level (SEL) is what is used to determine if the Noise Exposure Limits have reached hazardous levels for high hearing loss. The SEL is a measure of the equivalent sound level over a one second interval.

There is shocking data hidden in Appendix Table C-3 page 3 of DEIS on exposure of schools to the F/18-E/F noise. That table gives Sound Exposure Level (SEL) for a single jet flying over. For Plaza Elementary School at location S10, the level of the SEL is 110.8 dB for one second for each F/18-E/F jet. The EPA exposure limit for a 110.8 dB it is a short 6.9 seconds in a day. **Therefore after only six jet exposures, the exposure limit has been reached and any additional noise becomes hazardous for high hearing losses to the children!** During busy times, planes arrive and practice at Oceana about every 30 seconds for hours. This exposure time could easily be exceeded by children's recess, outside gym classes and after school athletic practice, not to mention going home and living in a high noise area. **The F/18-E/F undeniably poses a serious hazard for high hearing losses to the children.**

Most jets produce over a 140 dB near them, but the F/18-E/F even produces powerful sound at a distance. According to Table 4-20 of EIS, the F/18-E/F jet produces a sound exposure level of 117 dB for one second on departure at 1000 feet altitude. According to the DEIS the jets fly under 1000 feet over many areas including schools. Pilots can also operate their jets at higher noise levels than navy estimates. The EPA exposure limit for a 117 dB noise is only 1.8 seconds in a day. **So anyone experiencing more than one jet in a day would exceed hazardous levels to their hearing!**

Besides the damage to hearing issues, it is known that noise over a 120 dB exceeds the pain threshold for the average person, so the noise actually begins to cause pain. Some people start to experience pain at 100 dB. Low-flying F/18-E/F could destroy the tourist business in Virginia Beach, as a painful noise experience could stop someone from coming again, and give Virginia Beach a reputation as a tourist area to avoid.

Even under the NIOSH noise exposure limit, that protects only 50 percent of employees, allows only 17.7 seconds exposure in the day for a 117 dB. It would take only 18 jets to reach hazardous levels to hearing. Yet according to Table 4-4 of DEIS, under Alternative 1, Oceana would average 517 jets operations per day, so there are plenty of jet operations to reach hazardous levels to hearing.

An outlying field (OLF) would not decrease noise around Oceana. According to page 4-31 of DEIS, "The decrease in noise exposure if a new OLF were constructed under ALT 1, 4A, 4B, or 6 would occur primarily within the noise zones around NALF Fentress."

In the DEIS the Navy predicts that the walls of a school or home should drop the outside noise 20 dB if windows are closed, and 15 dB if windows are open. Even if 20 dB is subtracted from the 117 dB of the F/18-E/F, that still leaves 97 dB inside for which the EPA noise exposure limit is 3 minutes in a day. If the windows are open, then the EPA noise exposure limit is only 53 seconds. So even being inside the school or home will significantly contribute to exceeding the noise exposure limits. All this adds up to serious risks for reaching hazardous levels for high hearing losses to the children and adults.

Where loud noises exist, any responsible employer would have actual measurements done based on the scientific methods of the evaluating hearing damage potential. Although the Navy takes great precaution to protect its own personnel from hearing damage for which it would have to pay disability, it has completely ignored the public. The Navy clearly has decided to conceal the hearing damage issues in the DEIS, obviously because if the facts are known the public would not allow the jets to come here. In Appendix section B.3.4 on page B-18, titled "Hearing Loss", they first quote an old study from 1985 which states: "Studies on community hearing loss from exposure to aircraft flyovers near airports showed that there is no danger, under normal circumstance, of hearing loss due to aircraft noise (Newman and Beattie 1985)". To compare 1985 jets to an F/18-E/F is nonsense, as there have been several new models and each new model of jet has produced more noise. The most shocking and convicting statement is the conclusion to this section; "Because it is unlikely that airport neighbors will remain outside their homes 24 hours per day for extended periods of time, there is little possibility of hearing loss below a day-night average sound level of 75 dB and this level is extremely conservative" Any expert in hearing protection knows that the day-night average has nothing to do with evaluating for hazardous exposure limits for hearing loss. The truth is that even a few seconds of jet noise in a day can exceed the hazardous exposure limits.

The Navy is exploiting public ignorance on how the short loud jet noises contribute to exceeding the exposure limits. The Navy obviously is aware of how noise is evaluated for hearing damage but has chosen misleading deceptive statements instead of facts. For example, two jet noise exposures of 117db for one second exceeds the exposure limit for high hearing loss for a day. If the day night average (DNL) is calculated for these two exposures by equation $DNL = 10 \log_{10} \left(\frac{1}{24} \sum_{i=1}^n 10^{L_i/10} \right)$. The result is only 70 dB but has exceeded the noise exposure limit for high hearing loss. A 117 dB sound has 47 times the sound energy as a 70 dB sound, which is like comparing a 50-watt light bulb to a 2350-watt light bulb.

The Navy gives tables of equivalent noise in the DEIS in Appendix Table C-2. The equivalent noise (Leq) can not be used to accurately determine hearing related exposure because it is also an average level, and high levels considerably decrease exposure time as previously shown. But because the Navy's Leq is given over a 9-hour period, its peaks are not as diluted by averaging as the DNL longer period of 24 hours. But even the Leq shows a serious problem. The equation to convert Leq to EPA noise exposure limit is $LEL = Leq - 10 \log_{10} \left(\frac{9}{24} \right)$. The Leq for Food Lion at London Bridge Shopping Center is 79.9 dB, which is 10 times over the EPA daily exposure limit for only a 9-hour period, which doesn't even include the noise in the other 15 hours of the day. So after 53 minutes people in that area are at risk, and this is from the average level so actual time is much less. Lynnhaven Mall at 77.2 dB is 4 times over the exposure limit in the 9 hours. So even Navy data using average levels shows a serious problem.

Actual integrating sound meter and dosimeter readings were taken in a residential area about one mile from the Oceana airfield near the corner of Virginia Beach Boulevard and Sykes Avenue. The meter readings showed the noise exceeded the hazardous exposure level of the EPA within only 20 minutes! So there is already a serious problem now! During that time, peak noise levels frequently seen were 104 dB to 116 dB for the current jets.

During that time a single jet with a peak reading of 104.8 dB contributed 17.8 percent to reaching the maximum exposure permitted in a day. Thus it would take only 6 jets at this common reading to reach hazardous levels. Since the F/18-E/F is even louder, it would reach hazardous levels for high hearing losses even sooner.

Another consideration is that medical research has discovered that carbon monoxide increases the amount of hearing damage caused by noise. See <http://chppm-www.apgea.army.mil/hcp/facqs.aspx>. Under Alternative 1 according to the DEIS Table 4-34, Oceana would produce huge amounts of odorless but dangerous carbon monoxide (CO) gas of 3794.2 tons per year mostly from the F/18-E/F jets, which is 223% more than in the year 2000. Any amount over 100 tons exceeds the de minimus amount so requires approval from the Virginia Department of Environmental Quality (VDEQ). Even though the increase is 1703.3 tons which far exceeds 100 tons, the Navy failed to seek approval from the VDEQ in the DEIS. The VDEQ could not justify such an approval because the VDEQ's Carbon Monoxide monitor sites are now very close to exceeding the pollution limit at times. In addition to the pollution problem, this indicates that even the EPA noise exposure limits may be too high to protect the public from hearing damage due to the Carbon Monoxide effect.

In conclusion, the DEIS failed to describe the environmental impact of the F/18-E/F on hearing loss. The public, parents of children, and school administrators need to know how much time they can spend outside before risking damage to their hearing. There already is a very serious problem in Virginia Beach in regard to exceeding noise exposure limits that are hazardous for high hearing loss, so any effort to bring any jets into this area should not be considered. Instead the Navy should move enough existing jets out of Oceana to lower noise to safe levels. People will have the potential for high hearing loss if this continues.

c.c. Jet noise litigant attorneys

JUL 19 2005

June 10 2005

Received

To: Admiral Harold W. Gehman, Jr., USN (Ret.), Member of Base Realignment and Closure Commission
From: Citizens Against Hearing Damage, CAHD
Re: Base Closure Request

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CC Attorneys

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c.c. Jet noise litigant attorneys

JUL 19 2005

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June 10 2005

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From: Citizens Against Hearing Damage, CAHD
Re: Base Closure Request

Your Commission should reconsider the bases selected for closure, because of information not supplied to you about Oceana Naval Air Station in Virginia Beach, Virginia. The base exposes heavily populated areas around the base to noise levels that exceeds the US Environmental Protection Agency, EPA, and World Health Organization limits for hearing damage. With the arrival of the new louder jets, many more adults and children are exposed to noise that damages hearing according to scientifically validated noise exposure limits. To verify for yourself that EPA hearing damage limits are being exceeded, you can contact Wiley Laboratories, Inc that did the noise level studies around the base for the July 2002 Draft Environmental Impact Statement, DEIS, and have them calculate EPA noise figures from their data. Remember that EPA noise regulations apply to private property, not Navy noise standards or OSHA industrial noise standards which are higher and apply to the workplace and permits more hearing damage. So these jets are violating the law that applies to private property.

People are upset about Oceana, which is illustrated by the organization Citizens Concerned About Jet Noise, CCAJN, having five thousand members. There are over 2000 people currently suing the Navy in this area for disruption to their environment due to the jets, which is currently in court. Environmental problems such as jet noise, hearing damage, Carbon Monoxide and Ozone are opposed by CCAJN. Carbon Monoxide increases hearing damage from loud noises. The proposed Super Hornets in the DEIS is three times louder and has 10 times the sound energy as current aircraft at Oceana, which is like comparing a 50 watt light bulb to a 500 watt light bulb. The Super Hornet is rated at 117 DB at 1000 feet flying altitude which is only 3 DB below the level at which sound causes pain. There has also been a 200 percent increase in asthma in children in recent years, which is an Ozone affect. The Oceana base produces hydrocarbon pollution from the jets exhaust that when acted on by sunlight produces ozone. Ozone, when breathe by people, produces respiratory damage. This area exceeds both the State and Federal limits for Ozone, and the Oceana base is the main contributor to the problem. Many people are having various lung problems in this area when Ozone levels are high on sunny warm days. Yet the Navy command in this area still doesn't want to admit that the base with the new jets is unfit for this area. (See attached information on "Oceana Air Station Hearing Damage")

The Navy does not own enough property around the base to protect the people from the newer, very much louder and more polluting jets than the original jets housed there in the past. The base is not suitable for the modern jets. The base needs to be closed as it is violating pollution laws and hearing damage laws, so causing respiratory problems and damaging the hearing of people and children around the base. We ask you to act responsibly and close the base. If you don't close the base, the BRAC commission members may be personally sued by the people whose health is injured because of the lack of proper action on your part. It is your job to uphold the laws and protect the people from injury by the base.

CC Attorneys

Date: December 23, 2002

From: Citizens Against Hearing Damage

To: Charles W. Walker, Head, Environmental Planning Branch, Dept. of the Navy, Norfolk

Subject: Oceana Air Station Hearing Damage

Noise levels from jets at Oceana Air Station have been determined to cause hearing damage. Hearing damage caused by noise is a serious problem and many companies and the military are paying millions for their employees with hearing damage that could have been prevented. See <http://www.cdc.gov/niosh/hpworkrel.html> To prevent hearing damage the Environmental Protection Agency (EPA) and the National Institute Of Safety And Health (NIOSH), and World Health Organization had done extensive medical research on hearing damage to develop a noise exposure limit that would prevent hearing loss. NIOSH is the federal agency responsible for conducting research and making recommendations to prevent work-related injury.

Based on medical and scientific research, they made noise exposure limits to protect hearing from permanent damage. The EPA noise exposure limits will protect 96 percent of the people from hearing damage, while the NIOSH noise exposure limits will only protect 50 percent of the people. The National Academy of Science and the World Health Organization have also adopted the same noise exposure limits as the EPA. See <http://www.epa.gov/history/topics/noise/01.htm> The NIOSH are workplace exposure limits, which apparently allows more risk of damage for a salaried employee. Even the Navy has adopted noise exposure limits below the NIOSH limits for its own personnel. See http://www-nehc.med.navy.mil/downloads/ih/IHFOM_CH5.pdf The Occupational Safety Health Administration (OSHA) noise exposure limits have been criticized by experts as not protecting hearing, and have not changed in 20 years to keep pace with current scientific research. Since we are not receiving a Navy salary and the noise is in our environment, the EPA noise exposure limits apply for hearing protection.

All noise exposure limits to protect from hearing damage are given in two parts. One part is the loudness of the noise measured in decibels, dB, and the other part is the duration in one day that the noise lasts in time units, such as seconds, minutes or hours. According to NIOSH, the noise exposure limits are: "Exposure duration for which noise at this level becomes hazardous." and "Exposure at and above this level are considered hazardous." See <http://www.cdc.gov/niosh/98-126a.html>. If noise exposure is kept below these limits and then 50 percent of the people will lose 30 percent (2 dB) of hearing after 40 years due to noise. Under EPA only four percent of the people will lose 70 percent (5 dB) of hearing after 40 years due to the noise. The EPA protects more people, but hearing loss is greater. A comparison of noise exposure limits is at <http://www.nonoise.org/hearing/exposure/standardschart.htm>

The chart below gives Noise Exposure Limits to protect from high hearing losses.

dB Noise Level	EPA Noise Exposure Limits	NOISH Noise Exposure Limits
70 dB	24 hours	
76 dB	6 hours	
79 dB	3 hours	
82 dB	1hour 30 minutes	
85 dB	45 minutes	8 hours
88 dB	23 minutes	4 hours
94 dB	6 minutes	1 hour
97 dB	3 minutes	30 minutes
102 db	53 seconds	9 minutes 27 seconds
107 dB	16.7 seconds	2 minutes 59seconds
117 dB	1.7 seconds	17.7 seconds

The Noise Exposure Limits are calculated from the logarithmic equation: For EPA: $T=1440/2^{((L-70)/3)}$ For NOISH: $T=480/2^{((L-85)/3)}$ where L is the dB level. T is the maximum exposure time in minutes at this dB level to reach hazardous levels. The following website gives a good introduction to hearing protection exposure levels and calculations:
http://ceae.colorado.edu/~muehleis/classes/aren4020/handouts/lecture8/noise_levels.pdf

Noise exposure limits our equivalent. For example a three minutes exposure to noise at 97 dB is the equivalent to 70 dB for 24 hours. To determine if a person has reached a hazardous exposure when exposed to two different noise levels, the exposure time is converted into a fraction and added. For example one and half minutes at 97 dB produces a fraction of 1/2, and 12 hours at 70 dB produces a fraction also of 1/2. So 1/2 is added to the other 1/2 to equal 1, therefore the sounds together produce a hazardous exposure. Likewise many different noise levels can be converted to fractions and added together, and if the total is 1 or greater than the sounds together have produces a hazardous exposure for high hearing losses. Their are integrating sound meters or dosimeters that do this process automatically.

The Navy uses average sound in the Draft Environmental Impact Statement (DEIS) to discuss noise zones. **But average noise levels is not how noise is scientifically evaluated for hazardous exposure for high hearing loss.**

The Sound Exposure Level (SEL) is what is used to determine if the Noise Exposure Limits have reached hazardous levels for high hearing loss. The SEL is a measure of the equivalent sound level over a one second interval.

There is shocking data hidden in Appendix Table C-3 page 3 of DEIS on exposure of schools to the F/18-E/F noise. That table gives Sound Exposure Level (SEL) for a single jet flying over. For Plaza Elementary School at location S10, the level of the SEL is 110.8 dB for one second for each F/18-E/F jet. The EPA exposure limit for a 110.8 dB it is a short 6.9 seconds in a day. **Therefore after only six jet exposures, the exposure limit has been reached and any additional noise becomes hazardous for high hearing losses to the children!** During busy times, planes arrive and practice at Oceana about every 30 seconds for hours. This exposure time could easily be exceeded by children's recess, outside gym classes and after school athletic practice, not to mention going home and living in a high noise area. **The F/18-E/F undeniably poses a serious hazard for high hearing losses to the children.**

Most jets produce over a 140 dB near them, but the F/18-E/F even produces powerful sound at a distance. According to Table 4-20 of EIS, the F/18-E/F jet produces a sound exposure level of 117 dB for one second on departure at 1000 feet altitude. According to the DEIS the jets fly under 1000 feet over many areas including schools. Pilots can also operate their jets at higher noise levels than navy estimates. The EPA exposure limit for a 117 dB noise is only 1.8 seconds in a day. **So anyone experiencing more than one jet in a day would exceed hazardous levels to their hearing!**

Besides the damage to hearing issues, it is known that noise over a 120 dB exceeds the pain threshold for the average person, so the noise actually begins to cause pain. Some people start to experience pain at 100 dB. Low-flying F/18-E/F could destroy the tourist business in Virginia Beach, as a painful noise experience could stop someone from coming again, and give Virginia Beach a reputation as a tourist area to avoid.

Even under the NIOSH noise exposure limit, that protects only 50 percent of employees, allows only 17.7 seconds exposure in the day for a 117 dB. It would take only 18 jets to reach hazardous levels to hearing. Yet according to Table 4-4 of DEIS, under Alternative 1, Oceana would average 517 jets operations per day, so there are plenty of jet operations to reach hazardous levels to hearing.

An outlying field (OLF) would not decrease noise around Oceana. According to page 4-31 of DEIS, "The decrease in noise exposure if a new OLF were constructed under ALT 1, 4A, 4B, or 6 would occur primarily within the noise zones around NALF Fentress."

In the DEIS the Navy predicts that the walls of a school or home should drop the outside noise 20 dB if windows are closed, and 15 dB if windows are open. Even if 20 dB is subtracted from the 117 dB of the F/18-E/F, that still leaves 97 dB inside for which the EPA noise exposure limit is 3 minutes in a day. If the windows are open, then the EPA noise exposure limit is only 53 seconds. So even being inside the school or home will significantly contribute to exceeding the noise exposure limits. All this adds up to serious risks for reaching hazardous levels for high hearing losses to the children and adults.

Where loud noises exist, any responsible employer would have actual measurements done based on the scientific methods of the evaluating hearing damage potential. Although the Navy takes great precaution to protect its own personnel from hearing damage for which it would have to pay disability, it has completely ignored the public. The Navy clearly has decided to conceal the hearing damage issues in the DEIS, obviously because if the facts are known the public would not allow the jets to come here. In Appendix section B.3.4 on page B-18, titled "Hearing Loss", they first quote an old study from 1985 which states: "Studies on community hearing loss from exposure to aircraft flyovers near airports showed that there is no danger, under normal circumstance, of hearing loss due to aircraft noise (Newman and Beattie 1985)". To compare 1985 jets to an F/18-E/F is nonsense, as there have been several new models and each new model of jet has produced more noise. The most shocking and convicting statement is the conclusion to this section; "Because it is unlikely that airport neighbors will remain outside their homes 24 hours per day for extended periods of time, there is little possibility of hearing loss below a day-night average sound level of 75 dB and this level is extremely conservative" Any expert in hearing protection knows that the day-night average has nothing to do with evaluating for hazardous exposure limits for hearing loss. The truth is that even a few seconds of jet noise in a day can exceed the hazardous exposure limits.

The Navy is exploiting public ignorance on how the short loud jet noises contribute to exceeding the exposure limits. The Navy obviously is aware of how noise is evaluated for hearing damage but has chosen misleading deceptive statements instead of facts. For example, two jet noise exposures of 117db for one second exceeds the exposure limit for high hearing loss for a day. If the day night average (DNL) is calculated for these two exposures by equation $DNL = 10 \log_{10} \left(\frac{1}{24} \sum_{i=1}^n 10^{0.1 L_i} \right)$ The result is only 70 dB but has exceeded the noise exposure limit for high hearing loss. A 117 dB sound has 47 times the sound energy as a 70 dB sound, which is like comparing a 50-watt light bulb to a 2350-watt light bulb.

The Navy gives tables of equivalent noise in the DEIS in Appendix Table C-2. The equivalent noise (Leq) can not be used to accurately determine hearing related exposure because it is also an average level, and high levels considerably decrease exposure time as previously shown. But because the Navy's Leq is given over a 9-hour period, its peaks are not as diluted by averaging as the DNL longer period of 24 hours. But even the Leq shows a serious problem. The equation to convert Leq to EPA noise exposure limit is $LEL = Leq - 10 \log_{10} \left(\frac{9}{24} \right)$. The Leq for Food Lion at London Bridge Shopping Center is 79.9 dB, which is 10 times over the EPA daily exposure limit for only a 9-hour period, which doesn't even include the noise in the other 15 hours of the day. So after 53 minutes people in that area are at risk, and this is from the average level so actual time is much less. Lynnhaven Mall at 77.2 dB is 4 times over the exposure limit in the 9 hours. So even Navy data using average levels shows a serious problem.

Actual integrating sound meter and dosimeter readings were taken in a residential area about one mile from the Oceana airfield near the corner of Virginia Beach Boulevard and Sykes Avenue. The meter readings showed the noise exceeded the hazardous exposure level of the EPA within only 20 minutes! So there is already a serious problem now! During that time, peak noise levels frequently seen were 104 dB to 116 dB for the current jets.

During that time a single jet with a peak reading of 104.8 dB contributed 17.8 percent to reaching the maximum exposure permitted in a day. Thus it would take only 6 jets at this common reading to reach hazardous levels. Since the F/18-E/F is even louder, it would reach hazardous levels for high hearing losses even sooner.

Another consideration is that medical research has discovered that carbon monoxide increases the amount of hearing damage caused by noise. See <http://chppm-www.apgea.army.mil/hcp/facqs.aspx> Under Alternative 1 according to the DEIS Table 4-34, Oceana would produce huge amounts of odorless but dangerous carbon monoxide (CO) gas of 3794.2 tons per year mostly from the F/18-E/F jets, which is 223% more than in the year 2000. Any amount over 100 tons exceeds the de minimus amount so requires approval from the Virginia Department of Environmental Quality (VDEQ). Even though the increase is 1703.3 tons which far exceeds 100 tons, the Navy failed to seek approval from the VDEQ in the DEIS. The VDEQ could not justify such an approval because the VDEQ's Carbon Monoxide monitor sites are now very close to exceeding the pollution limit at times. In addition to the pollution problem, this indicates that even the EPA noise exposure limits may be too high to protect the public from hearing damage due to the Carbon Monoxide effect.

In conclusion, the DEIS failed to describe the environmental impact of the F/18-E/F on hearing loss. **The public, parents of children, and school administrators need to know how much time they can spend outside before risking damage to their hearing. There already is a very serious problem in Virginia Beach in regard to exceeding noise exposure limits that are hazardous for high hearing loss, so any effort to bring any jets into this area should not be considered. Instead the Navy should move enough existing jets out of Oceana to lower noise to safe levels. People will have the potential for high hearing loss if this continues.**

c.c. Jet noise litigant attorneys

JUL 19 2005

Received

June 10 2005

To: General James T. Hill, USA (Ret.), Member of Base Realignment and Closure Commission
From: Citizens Against Hearing Damage, CAHD
Re: Base Closure Request

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CC Attorneys

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c.c. Jet noise litigant attorneys

JUL 19 2005

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June 10 2005

To: Samuel Knox Skinner, Member of Base Realignment and Closure Commission
From: Citizens Against Hearing Damage, CAHD
Re: Base Closure Request

Your Commission should reconsider the bases selected for closure, because of information not supplied to you about Oceana Naval Air Station in Virginia Beach, Virginia. The base exposes heavily populated areas around the base to noise levels that exceeds the US Environmental Protection Agency, EPA, and World Health Organization limits for hearing damage. With the arrival of the new louder jets, many more adults and children are exposed to noise that damages hearing according to scientifically validated noise exposure limits. To verify for yourself that EPA hearing damage limits are being exceeded, you can contact Wiley Laboratories, Inc that did the noise level studies around the base for the July 2002 Draft Environmental Impact Statement, DEIS, and have them calculate EPA noise figures from their data. Remember that EPA noise regulations apply to private property, not Navy noise standards or OSHA industrial noise standards which are higher and apply to the workplace and permits more hearing damage. So these jets are violating the law that applies to private property.

People are upset about Oceana, which is illustrated by the organization Citizens Concerned About Jet Noise, CCAJN, having five thousand members. There are over 2000 people currently suing the Navy in this area for disruption to their environment due to the jets, which is currently in court. Environmental problems such as jet noise, hearing damage, Carbon Monoxide and Ozone are opposed by CCAJN. Carbon Monoxide increases hearing damage from loud noises. The proposed Super Hornets in the DEIS is three times louder and has 10 times the sound energy as current aircraft at Oceana, which is like comparing a 50 watt light bulb to a 500 watt light bulb. The Super Hornet is rated at 117 DB at 1000 feet flying altitude which is only 3 DB below the level at which sound causes pain. There has also been a 200 percent increase in asthma in children in recent years, which is an Ozone affect. The Oceana base produces hydrocarbon pollution from the jets exhaust that when acted on by sunlight produces ozone. Ozone, when breathe by people, produces respiratory damage. This area exceeds both the State and Federal limits for Ozone, and the Oceana base is the main contributor to the problem. Many people are having various lung problems in this area when Ozone levels are high on sunny warm days. Yet the Navy command in this area still doesn't want to admit that the base with the new jets is unfit for this area. (See attached information on "Oceana Air Station Hearing Damage")

The Navy does not own enough property around the base to protect the people from the newer, very much louder and more polluting jets than the original jets housed there in the past. The base is not suitable for the modern jets. The base needs to be closed as it is violating pollution laws and hearing damage laws, so causing respiratory problems and damaging the hearing of people and children around the base. We ask you to act responsibly and close the base. If you don't close the base, the BRAC commission members may be personally sued by the people whose health is injured because of the lack of proper action on your part. It is your job to uphold the laws and protect the people from injury by the base.

CC Attorneys

Date: December 23, 2002

From: Citizens Against Hearing Damage

To: Charles W. Walker, Head, Environmental Planning Branch, Dept. of the Navy, Norfolk

Subject: Oceana Air Station Hearing Damage

Noise levels from jets at Oceana Air Station have been determined to cause hearing damage. Hearing damage caused by noise is a serious problem and many companies and the military are paying millions for their employees with hearing damage that could have been prevented. See <http://www.cdc.gov/niosh/hpworkrel.html> To prevent hearing damage the Environmental Protection Agency (EPA) and the National Institute Of Safety And Health (NIOSH), and World Health Organization had done extensive medical research on hearing damage to develop a noise exposure limit that would prevent hearing loss. NIOSH is the federal agency responsible for conducting research and making recommendations to prevent work-related injury.

Based on medical and scientific research, they made noise exposure limits to protect hearing from permanent damage. The EPA noise exposure limits will protect 96 percent of the people from hearing damage, while the NIOSH noise exposure limits will only protect 50 percent of the people. The National Academy of Science and the World Health Organization have also adopted the same noise exposure limits as the EPA. See <http://www.epa.gov/history/topics/noise/01.htm> The NIOSH are workplace exposure limits, which apparently allows more risk of damage for a salaried employee. Even the Navy has adopted noise exposure limits below the NIOSH limits for its own personnel. See http://www-nehc.med.navy.mil/downloads/ih/IHFOM_CH5.pdf The Occupational Safety Health Administration (OSHA) noise exposure limits have been criticized by experts as not protecting hearing, and have not changed in 20 years to keep pace with current scientific research. Since we are not receiving a Navy salary and the noise is in our environment, the EPA noise exposure limits apply for hearing protection.

All noise exposure limits to protect from hearing damage are given in two parts. One part is the loudness of the noise measured in decibels, dB, and the other part is the duration in one day that the noise lasts in time units, such as seconds, minutes or hours. According to NIOSH, the noise exposure limits are: "Exposure duration for which noise at this level becomes hazardous." and "Exposure at and above this level are considered hazardous." See <http://www.cdc.gov/niosh/98-126a.html>. If noise exposure is kept below these limits and then 50 percent of the people will lose 30 percent (2 dB) of hearing after 40 years due to noise. Under EPA only four percent of the people will lose 70 percent (5 dB) of hearing after 40 years due to the noise. The EPA protects more people, but hearing loss is greater. A comparison of noise exposure limits is at <http://www.nonoise.org/hearing/exposure/standardschart.htm>

The chart below gives Noise Exposure Limits to protect from high hearing losses.

dB Noise Level	EPA Noise Exposure Limits	NOISH Noise Exposure Limits
70 dB	24 hours	
76 dB	6 hours	
79 dB	3 hours	
82 dB	1hour 30 minutes	
85 dB	45 minutes	8 hours
88 dB	23 minutes	4 hours
94 dB	6 minutes	1 hour
97 dB	3 minutes	30 minutes
102 db	53 seconds	9 minutes 27 seconds
107 dB	16.7 seconds	2 minutes 59seconds
117 dB	1.7 seconds	17.7 seconds

The Noise Exposure Limits are calculated from the logarithmic equation: For EPA: $T=1440/2^{((L-70)/3)}$ For NOISH: $T=480/2^{((L-95)/3)}$ where L is the dB level. T is the maximum exposure time in minutes at this dB level to reach hazardous levels. The following website gives a good introduction to hearing protection exposure levels and calculations:
http://ceae.colorado.edu/~muehleis/classes/aren4020/handouts/lecture8/noise_levels.pdf

Noise exposure limits our equivalent. For example a three minutes exposure to noise at 97 dB is the equivalent to 70 dB for 24 hours. To determine if a person has reached a hazardous exposure when exposed to two different noise levels, the exposure time is converted into a fraction and added. For example one and half minutes at 97 dB produces a fraction of 1/2, and 12 hours at 70 dB produces a fraction also of 1/2. So 1/2 is added to the other 1/2 to equal 1, therefore the sounds together produce a hazardous exposure. Likewise many different noise levels can be converted to fractions and added together, and if the total is 1 or greater than the sounds together have produces a hazardous exposure for high hearing losses. Their are integrating sound meters or dosimeters that do this process automatically.

The Navy uses average sound in the Draft Environmental Impact Statement (DEIS) to discuss noise zones. **But average noise levels is not how noise is scientifically evaluated for hazardous exposure for high hearing loss.**

The Sound Exposure Level (SEL) is what is used to determine if the Noise Exposure Limits have reached hazardous levels for high hearing loss. The SEL is a measure of the equivalent sound level over a one second interval.

There is shocking data hidden in Appendix Table C-3 page 3 of DEIS on exposure of schools to the F/18-E/F noise. That table gives Sound Exposure Level (SEL) for a single jet flying over. For Plaza Elementary School at location S10, the level of the SEL is 110.8 dB for one second for each F/18-E/F jet. The EPA exposure limit for a 110.8 dB it is a short 6.9 seconds in a day. **Therefore after only six jet exposures, the exposure limit has been reached and any additional noise becomes hazardous for high hearing losses to the children!** During busy times, planes arrive and practice at Oceana about every 30 seconds for hours. This exposure time could easily be exceeded by children's recess, outside gym classes and after school athletic practice, not to mention going home and living in a high noise area. **The F/18-E/F undeniably poses a serious hazard for high hearing losses to the children.**

Most jets produce over a 140 dB near them, but the F/18-E/F even produces powerful sound at a distance. According to Table 4-20 of EIS, the F/18-E/F jet produces a sound exposure level of 117 dB for one second on departure at 1000 feet altitude. According to the DEIS the jets fly under 1000 feet over many areas including schools. Pilots can also operate their jets at higher noise levels than navy estimates. The EPA exposure limit for a 117 dB noise is only 1.8 seconds in a day. **So anyone experiencing more than one jet in a day would exceed hazardous levels to their hearing!**

Besides the damage to hearing issues, it is known that noise over a 120 dB exceeds the pain threshold for the average person, so the noise actually begins to cause pain. Some people start to experience pain at 100 dB. Low-flying F/18-E/F could destroy the tourist business in Virginia Beach, as a painful noise experience could stop someone from coming again, and give Virginia Beach a reputation as a tourist area to avoid.

Even under the NIOSH noise exposure limit, that protects only 50 percent of employees, allows only 17.7 seconds exposure in the day for a 117 dB. It would take only 18 jets to reach hazardous levels to hearing. Yet according to Table 4-4 of DEIS, under Alternative 1, Oceana would average 517 jets operations per day, so there are plenty of jet operations to reach hazardous levels to hearing.

An outlying field (OLF) would not decrease noise around Oceana. According to page 4-31 of DEIS, "The decrease in noise exposure if a new OLF were constructed under ALT 1, 4A, 4B, or 6 would occur primarily within the noise zones around NALF Fentress."

In the DEIS the Navy predicts that the walls of a school or home should drop the outside noise 20 dB if windows are closed, and 15 dB if windows are open. Even if 20 dB is subtracted from the 117 dB of the F/18-E/F, that still leaves 97 dB inside for which the EPA noise exposure limit is 3 minutes in a day. If the windows are open, then the EPA noise exposure limit is only 53 seconds. So even being inside the school or home will significantly contribute to exceeding the noise exposure limits. All this adds up to serious risks for reaching hazardous levels for high hearing losses to the children and adults.

Where loud noises exist, any responsible employer would have actual measurements done based on the scientific methods of the evaluating hearing damage potential. Although the Navy takes great precaution to protect its own personnel from hearing damage for which it would have to pay disability, it has completely ignored the public. The Navy clearly has decided to conceal the hearing damage issues in the DEIS, obviously because if the facts are known the public would not allow the jets to come here. In Appendix section B.3.4 on page B-18, titled "Hearing Loss", they first quote an old study from 1985 which states: "Studies on community hearing loss from exposure to aircraft flyovers near airports showed that there is no danger, under normal circumstance, of hearing loss due to aircraft noise (Newman and Beattie 1985)". To compare 1985 jets to an F/18-E/F is nonsense, as there have been several new models and each new model of jet has produced more noise. The most shocking and convicting statement is the conclusion to this section; "Because it is unlikely that airport neighbors will remain outside their homes 24 hours per day for extended periods of time, there is little possibility of hearing loss below a day-night average sound level of 75 dB and this level is extremely conservative" Any expert in hearing protection knows that the day-night average has nothing to do with evaluating for hazardous exposure limits for hearing loss. The truth is that even a few seconds of jet noise in a day can exceed the hazardous exposure limits.

The Navy is exploiting public ignorance on how the short loud jet noises contribute to exceeding the exposure limits. The Navy obviously is aware of how noise is evaluated for hearing damage but has chosen misleading deceptive statements instead of facts. For example, two jet noise exposures of 117db for one second exceeds the exposure limit for high hearing loss for a day. If the day night average (DNL) is calculated for these two exposures by equation $DNL = 10 \log_{10} \left(\frac{1}{24} \sum_{i=1}^n 10^{0.1 L_i} \right)$. The result is only 70 dB but has exceeded the noise exposure limit for high hearing loss. A 117 dB sound has 47 times the sound energy as a 70 dB sound, which is like comparing a 50-watt light bulb to a 2350-watt light bulb.

The Navy gives tables of equivalent noise in the DEIS in Appendix Table C-2. The equivalent noise (Leq) can not be used to accurately determine hearing related exposure because it is also an average level, and high levels considerably decrease exposure time as previously shown. But because the Navy's Leq is given over a 9-hour period, its peaks are not as diluted by averaging as the DNL longer period of 24 hours. But even the Leq shows a serious problem. The equation to convert Leq to EPA noise exposure limit is $LEL = Leq - 10 \log_{10} \left(\frac{9}{24} \right)$. The Leq for Food Lion at London Bridge Shopping Center is 79.9 dB, which is 10 times over the EPA daily exposure limit for only a 9-hour period, which doesn't even include the noise in the other 15 hours of the day. So after 53 minutes people in that area are at risk, and this is from the average level so actual time is much less. Lynnhaven Mall at 77.2 dB is 4 times over the exposure limit in the 9 hours. So even Navy data using average levels shows a serious problem.

Actual integrating sound meter and dosimeter readings were taken in a residential area about one mile from the Oceana airfield near the corner of Virginia Beach Boulevard and Sykes Avenue. The meter readings showed the noise exceeded the hazardous exposure level of the EPA within only 20 minutes! So there is already a serious problem now! During that time, peak noise levels frequently seen were 104 dB to 116 dB for the current jets.

During that time a single jet with a peak reading of 104.8 dB contributed 17.8 percent to reaching the maximum exposure permitted in a day. Thus it would take only 6 jets at this common reading to reach hazardous levels. Since the F/18-E/F is even louder, it would reach hazardous levels for high hearing losses even sooner.

Another consideration is that medical research has discovered that carbon monoxide increases the amount of hearing damage caused by noise. See <http://chppm-www.apgea.army.mil/hcp/facqs.aspx> Under Alternative 1 according to the DEIS Table 4-34, Oceana would produce huge amounts of odorless but dangerous carbon monoxide (CO) gas of 3794.2 tons per year mostly from the F/18-E/F jets, which is 223% more than in the year 2000. Any amount over 100 tons exceeds the de minimus amount so requires approval from the Virginia Department of Environmental Quality (VDEQ). Even though the increase is 1703.3 tons which far exceeds 100 tons, the Navy failed to seek approval from the VDEQ in the DEIS. The VDEQ could not justify such an approval because the VDEQ's Carbon Monoxide monitor sites are now very close to exceeding the pollution limit at times. In addition to the pollution problem, this indicates that even the EPA noise exposure limits may be too high to protect the public from hearing damage due to the Carbon Monoxide effect.

In conclusion, the DEIS failed to describe the environmental impact of the F/18-E/F on hearing loss. **The public, parents of children, and school administrators need to know how much time they can spend outside before risking damage to their hearing. There already is a very serious problem in Virginia Beach in regard to exceeding noise exposure limits that are hazardous for high hearing loss, so any effort to bring any jets into this area should not be considered. Instead the Navy should move enough existing jets out of Oceana to lower noise to safe levels. People will have the potential for high hearing loss if this continues.**

c.c. Jet noise litigant attorneys