

# Committee on Resources

## Subcommittee on Forests & Forest Health

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### Witness Testimony

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Testimony on  
Oversight hearing on  
Regional Haze  
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Smoke Management Program Manager  
Oregon Department of Forestry  
Before the  
House of Representatives  
Subcommittee on Forests and Forest Health  
July 16, 1998

I would like to thank you, Chair Chenoweth and all the members of the subcommittee for this opportunity to testify before you at this hearing. I have never testified before Congress, so it is a memorable day for me.

I have been asked by committee staff to share information with you on the topic of the Oregon approach to managing and regulating forest land prescribed burning on federal lands in the northeast section of our state. The process was developed in the past few years using an interdisciplinary team of federal land managers and air quality regulators. The final product was well accepted and supported by the members of the group. The group used a new approach to address the concerns of the land managers and the air quality regulators. I believe the approach we used and the final agreement have been successful at balancing the need to conduct an increasing amount of prescribed burning for forest health restoration, while simultaneously protecting air quality.

I will give a brief summary of the problem, the process, and the ultimate resolution in my written comments. I will also attach a paper by Brian Finneran of the Oregon Department of Environmental Quality as further reference for you.

I will also make a few comments about the federal fire and vegetative management policy and the proposed regional haze rules.

### **BACKGROUND**

Forest health in the northeastern section of Oregon became a major concern in the late 1980's when many thousands of acres of forests were showing signs of poor health. Forests that were too dense, had in improper balance of tree species, and an extended drought were all contributing factors to a Major portion of the forest being under stress. Very significant tree mortality was occurring.

There was also a very significant increase in the amount of wildfire in the area, burning many more acres than the historical average. The type of wildfire also changed, resulting in many more severe fires. Large "crown" fires became a more frequent event.

Federal land managers decided that in order to restore and maintain the forest ecosystem in northeast Oregon, prescribed fire would have to be used significantly more than in the past. The federal land managers wanted to increase their use of prescribed fire four-fold, from about 30,000 acres per year to about 120,000 acres. Prescribed fire would have many desirable effects upon the forest ecosystem; reducing the density of trees, selecting for the desirable species, and restoring a more natural forest stand structure.

### **THE PROBLEM**

The problem then became the increased smoke from that potential increase in the use of prescribed fire. How would air quality be affected and how could the burning be accomplished under the provisions of the Clean Air Act?

### **THE RESOLUTION PROCESS**

A group of people came together to work on the problem of allowing additional federal land prescribed burning while protecting the air quality. The group did recognize that ecosystem restoration was critical, that prescribed burning would play a key role, and that air quality problems should be minimized.

The final resolution of the problem depended upon finding a new "frame of reference" for dealing with the problem. That new "frame of reference" was the group's recognition that by doing more prescribed burning we would eventually have less wildfire and wildfire smoke in the future. The parties did recognize this "trade-off", which was key to the final agreement. The group also recognized that smoke from prescribed burning could be managed so it is less of a problem than the unmanageable smoke from wildfire. To the best of my knowledge, no regulatory process had officially recognized this "trade-off" of prescribed fire and wildfire smoke as a key part of the process.

### **THE AGREEMENT**

The final agreement incorporated several key elements and allowed roughly a three-fold increase in prescribed burning (not the four-fold increase the land managers sought). Those key elements of the northeast Oregon smoke management program include:

- A "no net increase" in total emissions, a key element being the use of a base of wildfire emissions plus prescribed fire emissions. We wanted to maintain the total amount of emissions at or below the historical averages.
- An annual emission limit was established for the use of prescribed fire on federal lands. The emission limit was developed using historical wildfire and prescribed fire emissions and compared against a "natural" emission level.
- A mandatory smoke management program for federal lands in the area, which includes daily forecasts and burning instructions issued by trained meteorologists, designed to keep smoke from populated areas. Daily reporting of prescribed burning is required.
- "Real-time" air quality monitoring in key cities in the area.
- Federal land managers would use non-burning alternatives in the restoration process when appropriate, instead of prescribed fire. The managers would also use emission reduction burning techniques when possible.

The agreement has allowed federal land managers to significantly increase their prescribed burning for forest ecosystem restoration while protecting public health. The federal land managers have increased their

prescribed burning to the point that they reached the emission cap late list year.

## CONCLUSIONS

I believe there are several key points to be learned from the process we went through to develop the northeast smoke management plan, they are:

- When "emission producers" and regulators agree that there is a problem, they can often solve the problem locally, if there is significant flexibility within the national rules and guidelines.
- The regulatory agencies should encourage the development of new processes at the local level, which best meet the local needs. The regulatory agencies should be prepared to accept those local solutions.

## COMMENTS CONCERNING THE FEDERAL LAND MANAGERS FIRE AND VEGETATION POLICY AND THE EPA'S PROPOSED REGIONAL HAZE RULES

- We support the federal land management fire and vegetation policies. We do hope, however, that the federal land managers will have enough flexibility to be able to use all the ecosystem restoration tools available. If the federal land managers cannot adequately use thinning through harvest, mechanical treatments, or salvage of dead or dying trees, it will force them to rely too heavily upon prescribed fire and they will not be able to fully achieve their ecosystem restoration goals.
- We encourage the EPA to incorporate a significant amount of flexibility into the final regional haze rules, in order to allow local solutions. In Oregon's case, that recognition should include the fact that many of our Class I visibility areas receive almost all their public visitation during the summer months. That could mean a high level of protection measures during the summer months and relaxed standards during the other months, which would allow more ecosystem treatment. We also believe the standards could differentiate between very high use areas, such as Crater Lake National Park and The Grand Canyon, and the lesser used Class I areas. We also believe that the regional haze rules should incorporate some flexibility to account for the increased level of ecosystem restoration prescribed fire.

Thank you for the opportunity to comment. I would be happy to respond to any questions you may have now or at a later date.

### **ATTACHMENT**

OREGON PSD STRATEGY TO ADDRESS FOREST HEALTH PRESCRIBED BURNING'  
March 1995

Brian R. Finnerran1

### **ABSTRACT**

Some of the highest mortality in the country is occurring in the forests of the Blue Mountains in northeastern Oregon. The frequency and magnitude of wildfire in the four national forests (six million acres) which comprise this area has increased dramatically over the last 10 years. The Oregon Department of Environmental Quality (ODEQ) has been actively working to address this forest health problem. Over the last three years air regulators and forest land managers from Oregon and neighboring states have been working together to develop a comprehensive strategy to balance the need for a 4-fold increase in prescribed burning to restore forest health with the need to protect air quality. A consensus agreement was recently

reached and put in the form of a Memorandum of Understanding (MOU), based on the concept of a "no net increase" in forest emissions in order to satisfy state Prevention of Significant Deterioration (PSD) and other air quality requirements. This concept involves a new approach of combining wildfire and prescribed burning PM10 emissions to establish a PSD baseline, and then keeping the combined emissions at or below the baseline in order to avoid consuming PSD increments. Included in the MOU is an annual emission limit on future prescribed burning and an annual "target" emission level for wildfire, which if complied with would ensure emissions do not exceed the PSD baseline. Also included is a mandatory smoke management program, a "real-time" air monitoring network, and commitments by federal forest land managers to increase efforts in slash utilization, mechanical removal and fire suppression. ODEQ believes this comprehensive strategy will satisfy both forest ecosystem management objectives and state Clean Air Act requirements.

**KEYWORDS:** PSD, Clean Air Act, PM10 emissions, "no net increase" concept, MOU.

## **INTRODUCTION**

As shown in Figure I on the following page, Oregon's Blue Mountains cover the northeastern corner of the state, extending into portions of southeast Washington and western Idaho. The majority of the forested lands are managed by the USDA Forest Service, with a smaller area managed by the USDI Bureau of Land Management (BLM). The forest health problem in this area has been well documented-' The combination of fifty years of wildfire suppression, inappropriate tree species manipulation, and an eight-year drought has resulted in widespread insect infestation and disease outbreaks. As much as 50 percent of the six million acres of federally forested lands in this area is currently dead or dying. As illustrated in Figure 2, this has resulted in a dramatic increase in wildfire emissions over the last 10 years, and conditions conducive to catastrophic wildfire.' Federal forest land managers believe a significant increase in the use of prescribed fires needed to help restore and maintain that forest ecosystem. As a result, the Forest Service is planning a 4-fold increase in prescribed burning, or from approximately 30,000 to 120,000 acres per year. This increase is expected to be gradual, beginning in 1995. Also planned is a shift from traditional broadcast and pile burning to greater understory burning. In terms of air pollution, this increase in prescribed burning and shift towards understory burning is estimated to produce annually approximately 21,000 tons of PM10. For comparison, this is nearly equal to the annual PM10 industrial emissions in Oregon, and about 80 percent of current statewide emissions from prescribed burning.

[Figures 1 and 2 are not available in this format. Please call the subcommittee for a faxed version]

## **Forest Ecosystem Concerns**

From an ecosystem standpoint, ODEQ recognizes the importance of fire in the forest as a means of fire hazard reduction, disease and insect control, and general ecosystem maintenance. Historically, low-intensity/high-frequency wildfires have played a significant role in maintaining forest ecosystem health in Oregon's Blue Mountains. However, an active wildfire suppression program over the last 50 years has altered the natural 15 year fire return cycle in this region. As indicated by the wildfire emissions in Figure 2, early fire suppression efforts were successful. The mid-1980's marked a turning point in forest health and wildfire. Heavy fuel accumulations and the gradual replacement of native pine tree species with predominately fir species, poorly adapted to the dry climate and much more susceptible to drought and insect epidemics and disease outbreaks, set the stage for more frequent and higher intensity wildfires which we are seeing today.

## **AIR QUALITY CONCERNS**

From an air quality standpoint, ODEQ and many state air quality agencies recognize that if the massive quantities of brush, dead trees, and other forest debris created by forest health problems are not reduced, PM10 emissions from wildfires will continue to increase, threatening air quality and public health/safety. Not only have many areas in the West recently witnessed a significant increase in wildfire, but the potential for catastrophic wildfires similar to the 1988 Yellowstone Fire still exists. If expanding the use of prescribed burning is part of the answer to this problem, it is essential that potential air quality impacts be assessed.

A 4-fold increase in burning, as well as a major shift from traditional broadcast and pile burning to understory burning, poses significant smoke management problems. Although understory burning produces fewer emissions per acre, it could cause greater amounts of ground level smoke, and the potential for greater localized smoke impacts. In areas such as Oregon's Blue Mountains where there was no mandatory smoke management controls, the concern was that the combination of increased burning and shift to understory treatment would lead to increased smoke impacts in smoke-sensitive areas" (populated areas and wilderness/recreation areas).

From a regulatory standpoint, a 4-fold increase in prescribed burning could potentially violate PSD and other Clean Air Act provisions. Initial discussions between ODEQ and the Forest Service Region Six focused primarily on PSD. The objective of the PSD requirements in the Clean Air Act is to prevent air quality in "clean" areas which currently meet air quality standards from deteriorating beyond certain amounts or increments. Various options were discussed with the Forest Service to protect air quality, such as smoke management and PM10 monitoring improvements, as well as the use of non-burning or reduced burning alternatives, such as biomass removal, utilization, and mechanical thinning.

### **Oregon PSD Requirements**

There are many areas of the country where there is no PSD protection. Under federal rules, PSD protection starts or is "triggered" only when a new major stationary source submits a PSD application. This initiates the tracking of PSD increment consumption for the "baseline" area or region of the state that has been designated as attainment under Section 107 of the Act. This can create situations where a state may have different baseline areas with different baseline dates for each of the three PSD Increments. States have the flexibility under the Act to redefine baseline areas for air quality management purposes, providing The PSD baseline date for that area has not been triggered.

In Oregon, ODEQ chose to establish a statewide baseline date for PM10 of 1978 when it originally adopted its PSD provisions, even though in several areas of the state, including northeast Oregon, no major PSD sources had triggered PSD.

### **PSD and Prescribed Burning**

One of the first topics raised in discussions between ODEQ and the Forest Service was on the applicability of PSD to prescribed burning under the Clean Air Act. There were two primary issues. One focused on whether PSD applied to area sources such as prescribed burning, or just "major emitting facilities", as defined in Section 169(l). The other focused on whether prescribed burning should be defined as a "temporary" activity and exempted from increment consumption, based on Section 163(c) relating to "emissions from construction or other temporary emission-related activities. "

ODEQ agreed that the PSD provisions in the Act focused almost exclusively on the permitting of major stationary sources. However, Section 160 of the Act clearly states that the purpose of PSD is to: (1) protect public health and welfare; (2) protect air quality in national parks, wilderness areas, and other scenic areas; (3) insure that economic growth in the "clean" areas occurs in a manner consistent with the preservation of clean air resources-, and (4) assure that emissions from any source do not interfere with SIP provisions to prevent significant deterioration (emphasis added). ODEQ felt that not only can emissions from prescribed burning degrade air quality, but increases in prescribed burning have the potential to consume PSD increment, which can lead to restrictions on future emission growth in the airshed.

In terms of the temporary nature of prescribed burning, the Environmental Protection Agency (EPA) specifically addressed this issue in 1989 in its public notice on the proposed PSD Increment for PM10. Here EPA indicated that temporary sources are those that do not "contribute to measured air quality levels on a singular basis." In discussing prescribed burning, EPA distinguished between burning which is temporary and burning which is "itinerant," i.e., that which "may be temporary at a specific location, but moves to nearby locations and still affects the air quality within the same airshed." While EPA allows states with approved PSD programs to adopt provisions to exempt certain prescribed burning activity from increment consumption, the exclusion provisions in the Act are intended to apply only on a case-by-case basis to "truly temporary" activities. ODEQ felt that prescribed burning in most cases is itinerant, and therefore subject to PSD. This interpretation has been supported by EPA Region 10 in discussions with the Forest Service.

### **Other Applicable Clean Air Act Requirements**

In relation to the proposed 4-fold increase in prescribed burning in Oregon's Blue Mountains, there were discussions between ODEQ, EPA, BLM and the Forest Service on other Clean Air Act requirements.

#### 1. National Ambient Air Quality Standards (NAAQS)

Typically in Oregon, smoke impacts from prescribed burning are of an intensity and duration which rarely result in exceedances of the 24-hour PM10 NAAQS. However, occasionally these impacts occur at times when there are elevated PM10 emissions in communities, making it possible for prescribed burning to contribute to 24-hour NAAQS exceedances. Therefore, in response to the proposed 4-fold increase in prescribed burning, it was agreed that a mandatory smoke management program was needed in northeast Oregon in order to protect the PM10 NAAQS.

#### 2. Visibility.

Oregon's Class I areas are protected from prescribed burning impacts under a state Visibility protection program. However, this visibility protection is currently only provided to western Oregon Class I areas in the Cascade Mountains, and involves prohibiting prescribed burning during the summer months (when 90 percent of the visitation occurs) to prevent visibility impairment. There are three Class I areas in northeast Oregon which may be impacted by the proposed increase in prescribed burning, however, this burning is intended to occur mostly in the spring, with the remainder in the fall. Should some burning be shifted to the summer, ODEQ and the Forest Service would review visibility monitoring data to determine if measures to protect visibility are needed.

#### 3. General Conformity.

As required by Section 176(c) the Act, states must adopt the General Conformity rule issued by EPA which specifies how federal actions above a certain threshold size will conform to SIPs. ODEQ recently adopted these rules, and in so doing added provisions which go beyond EPA's meet General Conformity Rules by requiring federal prescribed burning in attainment areas to meet These

requirements." As a result, prescribed burning in federal forests in Oregon will be required to prepare and submit general conformity determinations to ODEQ. This rule will allow ODEQ to review planned prescribed burning activities in national forests where PNI10 emissions exceed the de minimis level of 100 tons/year.

### **Inclusion of Wildfire Emissions**

Given the prominent role that wildfire has played historically in the Blue Mountains (a 1:15 year fire return interval), it became increasingly apparent that any discussion of PSD must address impacts from wildfire as well as prescribed burning. Although wildfire emissions have typically been regarded as "natural" and not included in PSD baseline calculations, it is clear that man's disruption of the natural fire cycle and forest management practices in the Blue Mountains has created an unnatural situation where wildfire emissions have been artificially increased. Such an increase in wildfire emissions must be considered 'anthropogenic', and if they reoccur on a regular basis within the same airshed, should be included in the PSD baseline. Any air quality analysis involving an increase in prescribed burning should also consider how much wildfire emissions be lowered by reducing fuel loadings Through prescribed burning and other methods. This raises the question - to what degree can increases in prescribed burning emissions be traded or offset by decreases in wildfire emissions accomplished through The use of prescribed fire and mechanical removal to reduce fuel loadings?

The use of prescribed fire for fire hazard abatement is a common forest management practice. However, on a large-scale basis there is limited information available on the emission reductions That can be expected from a prescribed burning/wildfire tradeoff program. A recent modeling study conducted by the USDA Forest Service Region 6 has attempted to assess this tradeoff. " In this study, a Fire Emission Tradeoff Model was developed in order to predict the combined emissions from prescribed fire and wildfire under different levels of prescribed fire treatment. Initial findings support the concept that wildfire emissions can be reduced by the use of prescribed fire.

Even though the use of prescribed fire for wildfire abatement is limited to the number of acres that can be created in a given area, ODEQ believes that there is justification for including wildfire emissions in PSD baseline determinations in areas such as the Blue Mountains where wildfire emissions have been anthropogenically increased and are a major contributor to pollution levels in the airshed. Discussions with EPA Region 10 on this topic have resulted in support for combining prescribed burning and wildfire emissions for purposes of developing PSD strategies.

### **THE "NO NET INCREASE IN EMISSIONS" CONCEPT**

Starting in late 1992, a series of meetings were initiated involving representatives from ODEQ, Forest Service, BLM, Oregon Department of Forestry (ODF), EPA Region 10, and the Washington Department of Ecology, to explore solutions to the forest health problem in the Blue Mountains. One of the key PSD issues involved the requirement to conduct a PSD' increment consumption analysis for the 4-fold increase in prescribed burning being planned in this area. This analysis generally requires complex dispersion modeling, which in the case of prescribed burning difficult given the problems associated with modeling open burning sources in complex terrain. In addition, this analysis would be very costly and time consuming, and delay efforts to address the forest health issue.

In order to establish a level of burning that would not consume increment and allow state PSD requirements to be met. ODEQ proposed a "no net increase in emissions" approach of combining

wildfire with prescribed burning emissions for determining a PSD baseline level. As illustrated in Figure 3 on the following page, this PSD baseline would serve as a "cap" on future emissions from prescribed burning and wildfire, thereby avoiding increment consumption. To accomplish this, a permanent annual "prescribed burning emission limit" and "wildfire emission target level" would be established. Using as a baseline recent actual emissions. Prescribed burning emissions would be closely tracked during the year and the burning activity curtailed if the limit is reached. The wildfire target level reflects more of a projected estimate of future wildfire emissions based on anticipated reductions in fuel loadings through the use of prescribed fire and increased mechanical removal of forest debris, plus increased wildfire suppression efforts. Wildfire emissions would be tracked over the first several years, and if the average during this time exceeds the annual target level, this level would be adjusted upward with a corresponding adjustment of the annual prescribed burning limit downward, so that total emissions would be consistent with the baseline.

It was recognized in discussing the "no net increase" PSD concept that the determination of baseline emissions was a key element. Under the Oregon PSD rules, 1978 was established as the baseline date for all attainment areas in the state. However, incomplete prescribed burning records from this time period made emission estimates difficult. Additionally, the wildfire emission inventory was incomplete, and it was felt that 1978 as the baseline date was not representative of normal wildfire emissions. ODEQ believed a more appropriate PSD baseline would be one that is "contemporaneous" with the planned increase in PM10 emissions in the baseline area (Blue Mountains), similar to the baseline setting approach under the federal PSD rules. Since no new major source had located in this area since 1979 (triggering PSD), ODEQ could consider amending its rules in order to better implement the "no net increase" concept.

### **THE FOREST HEALTH MOU**

While the "no net increase" concept was developed to address PSD requirements, it also helps protect the NAAQS by not allowing future forest burning emissions to exceed current baseline emissions. This concept was part of a comprehensive strategy which included several significant air quality improvements for the Blue Mountains. In December of 1994 this comprehensive strategy was incorporated into a Memorandum of Understanding (MOU) between the ODEQ, the Forest Service, BLM, and the Oregon Department of Forestry. The key components of this MOU are as listed below:

1. Amend Oregon PSD Rules.

As part of the MOU agreement, ODEQ agreed to amend its PSD rules to establish a contemporaneous baseline date (1993) for the Blue Mountains area, from which prescribed burning P.M10 emissions would be regulated under the "no net increase" concept. This change involved amending the state rule definition for "Baseline Concentration", and was supported by EPA Region 10. ODEQ adopted this rule amendment in March 1995.

2. Mandatory Smoke Management.

A mandatory smoke management program would be established for the Blue Mountains and run by the Oregon Department of Forestry. This program would be similar to the current smoke management program in western Oregon, which has been successful in reducing smoke impacts over the last 10 years. It would require that all prescribed burning conducted by the Forest Service and BLM occur under optimum meteorological conditions to maximize smoke dispersal, particularly upwind of any of the larger communities in northeast Oregon. Burning must also follow specific fuel moisture and fuel loading conditions to minimize overall emissions. This smoke management program would meet many of EPA's Best Available



Control Measures (BACM) for prescribed burning: (1) smoke dispersal evaluation, (2) burning planning, authorization, and administration, (3) real-time monitoring, (4) emission inventory, (5) emission reduction techniques, and (6) state oversight. BACM represents the most stringent level of control for regulating this activity.

### 3. Air Quality Monitoring

Included with the smoke management program is an air quality monitoring network to detect smoke impacts in the seven largest populated areas in northeast Oregon. This monitoring would consist of stationary nephelometers located with meteorological equipment. Data acquisition would be real-time and used by smoke managers to track smoke and visibility conditions, and issue smoke management instructions during the prescribed burning season (April through June). Real-time access to data would in some cases allow burning activity to be modified or terminated where smoke impacts are occurring.

### 4. Non-Burning Alternatives.

The Forest Service and BLM agreed in the MOU to increase efforts into slash utilization, mechanical treatment, low emission burning techniques, and fires suppression. This is particularly important in situations where the use of prescribed fire for wildfire abatement is not feasible due to the fire hazard associated with burning under heavy fuel loadings, such as in the urban/wildland interface. Any mechanical removal efforts would occur in a manner consistent with soil, wildlife, and watershed protection requirements.

### 5. Compliance with Emission Limits.

Provisions in the MOU require the Forest Service and BLM to track the number of acres burned from prescribed fire and wildfire each year and comply with the emission limits established through the "no net increase" PSD concept. An annual report must be prepared which summarizes air quality impacts and the general effectiveness of the smoke management program. ODRQ also conduct an annual audit of burn records in order to assess compliance with smoke management burning instructions.

## **CONCLUSION**

The proposed 4-fold increase in prescribed burning is expected to occur gradually over the next several years, starting in 1995. ODEQ anticipates the comprehensive strategy that has been developed will result in a net improvement in air quality in the Blue Mountains over the past 10-15 years. Under the "no net increase" concept, approximately 70% of the annual prescribed burning planned desired by the Forest Service would be allowed.

The highlights of this strategy are as follows:

- In those areas of the Blue Mountains where increased prescribed burning is planned, ground level smoke impacts will be reduced by trading uncontrolled wildfire for meteorological/fuel moisture/and fuel loading controlled prescribed burning.
- The no net increase approach will satisfy state PSD requirements, and combined with a mandatory smoke management program, will minimize smoke intrusions and help prevent prescribed burning from contributing to NAAQS violations
- The reduction in summertime wildfire emissions that is anticipated will benefit visibility in the Class I areas in northeast Oregon and reduce regional haze during this time of year.
- This strategy incorporates many of EPA's Best Available Control Measures for prescribed burning, which represents the greatest level of stringency for this activity.

- o Establishing a real-time air quality monitoring network will help detect smoke impacts, allow some modification of burning activity, aid in the daily smoke management decision-making process, and serve as an overall record on the effectiveness of the smoke management program.

ODEQ believes this strategy represents a successful step on the part of the state air regulators and federal forest land managers in developing an acceptable balance between forest ecosystem management objectives and air quality requirements.

#### **NOTES**

1. A paper presented at the Environmental Regulation and Prescribed Fire Conference, March 14-11, 1995. Tampa, Florida.
2. Brian R. Finneran, PM10 Coordinator, Oregon Department of Environmental Quality, Air Quality Division, Portland, Oregon.

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