National Mining Association
Western Longwall Mining Systems

MSHA Mine Academy

Beckley, West Virginia

February 21st and 22nd, 2007

Introduction

Industry View Of Bleeder Systems

Link Derick, An Associate Of Peabody Energy

Representing

The National Mining Association
Work Group On Western Longwall Mines

Summarizing Meeting In Grand Junction, Colorado
February 7th, 2007

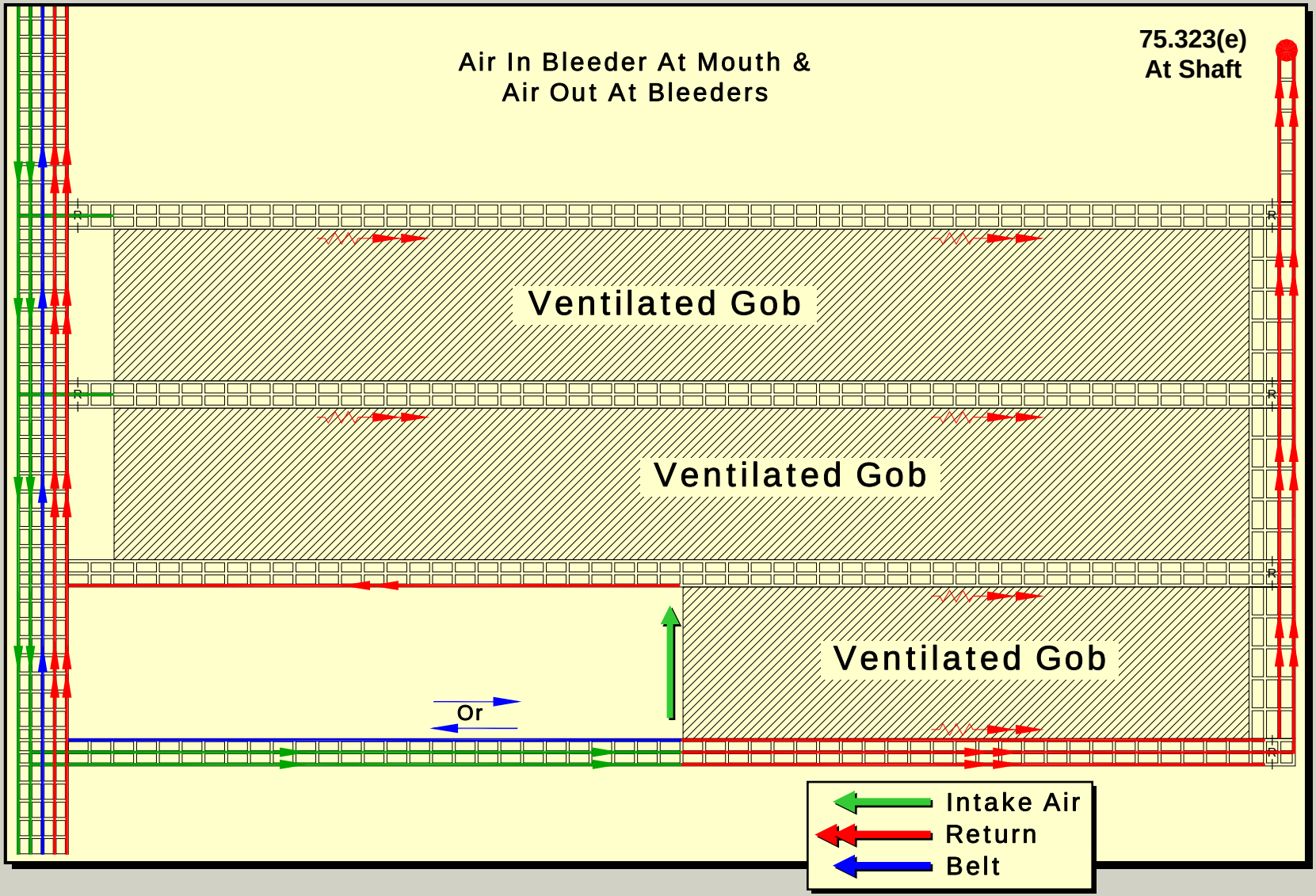
Participating Western Longwall Mines

Aberdeen Mine
Bowie #2 Mine
Bridger Mine
Deer Creek Mine
Deserado Mine
Dugout Canyon Mine
Elk Creek Mine
Foidel Creek Mine
San Juan South Mine
Skyline Mine
South Crandall Canyon Mine
Sufco Mine
West Elk Mine
West Ridge Mine

Major Topics For Discussion Today

- **Typical MSHA Accepted "Flow Through" Bleeder System**
- **Longwall Mining Systems Utilized In The West**
- **Oxygen Is The Only Component Of The "Fire Triangle" That Can Most Effectively Be Controlled To Prohibit Spontaneous Combustion And Explosive Potential Of Methane**
- **Impact Of Recent PPL On 75.323 (E) Interpretations – Appendix**
- **Impact Of Draft PPL On 75.334 (B) (1) Interpretations – Appendix**
- **Determination Of 75.334 (F) – Spontaneous Combustion Concerns (Application/Evaluation)**
- **Impact Of Recent PIB On 75.335 (A) (2) – Sealed Area Mine Atmospheres**
- **MSHA Previously Distributed "Bleeder Book"**
- **MSHA Regulations By Policy Versus Rulemaking - See CMA Comments**
- **Recommendations For Future Consideration**

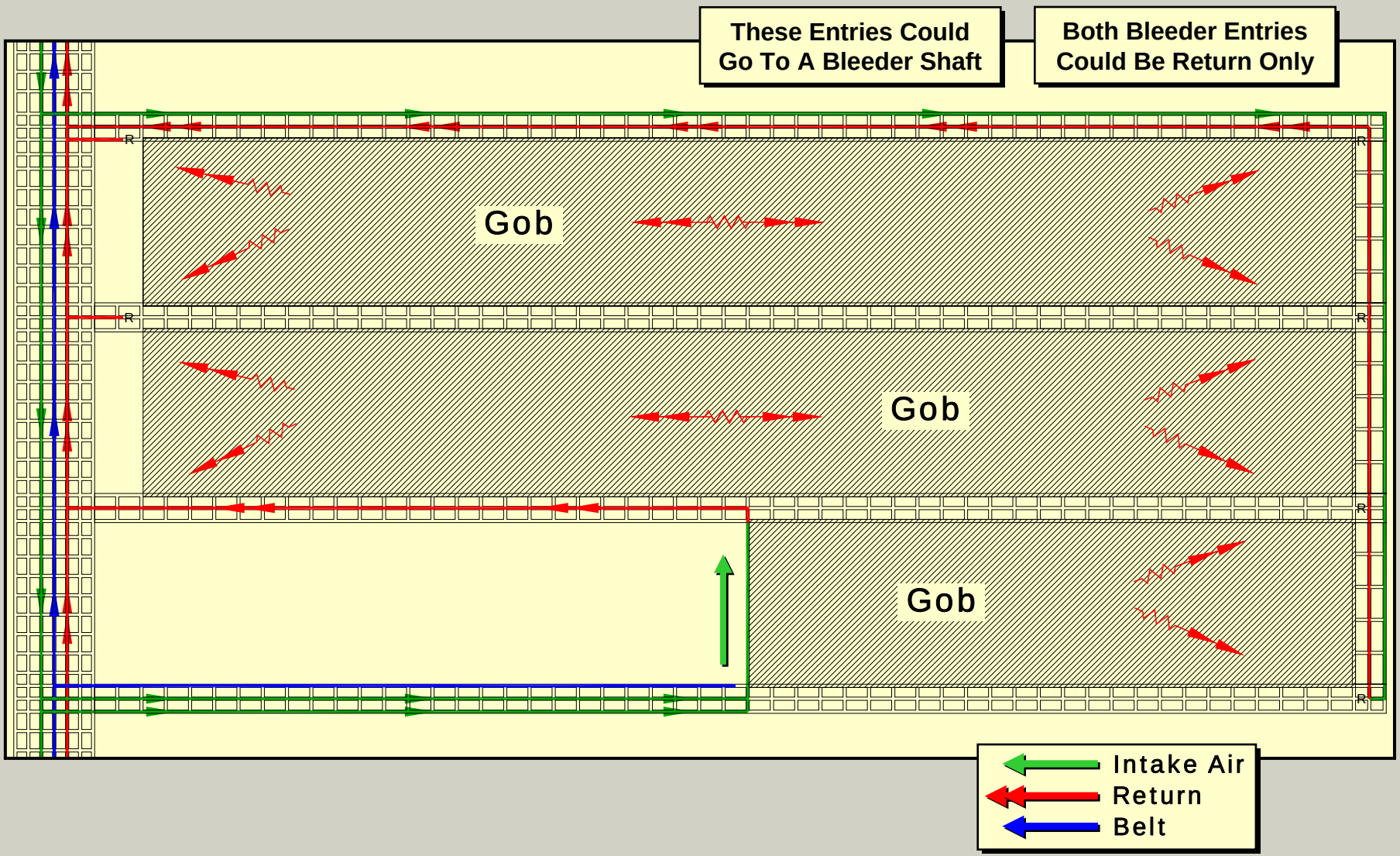
MSHA Typical Flow Through System



Tailored Western Systems
Designed To Limit Oxygen

- **Oxygen Is The Only Component Of The "Fire Triangle" That Can Most Effectively Be Controlled To Prohibit Spontaneous Combustion And Explosive Potential Of Methane**
- **Incubation Period Considerations Require The Oldest Gob To Have The Lowest Oxygen Exposure**
- **Control Devices For Possible Spontaneous Combustion Or Gob Fire**
  - **Apply Bleederless Techniques As Appropriate**
- **Gas Chromatography Widely Used To Monitor Gobs & Sealed Areas**
- **Western Mines Use Extensive AMS Monitoring Systems**
- **Gob Vent Boreholes Utilized For Pressure & Volume Control In Addition To Methane Removal**
- **Numerous Mine Fires Have Resulted From Application Of Typical Bleeder Systems**
  - **Dilution Principles – Oxygen Addition**
- **Oxygen & Methane Mixing Should Occur Outside Of Inaccessible Caved Gobs To Permit Monitoring & Control**

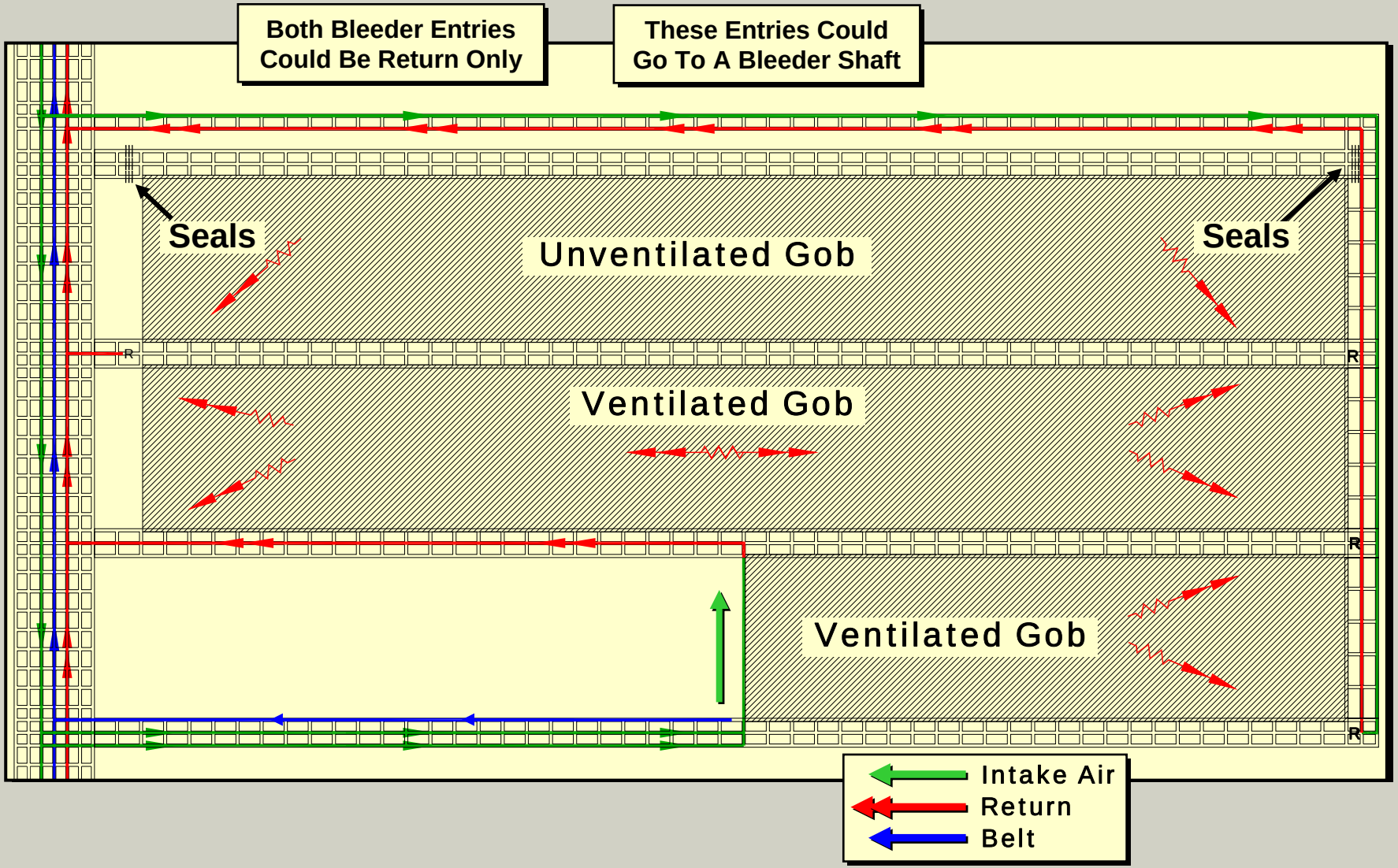
Current – Limited Use Western Bleeder System
Lower Methane/Lower Sponcom Concerns



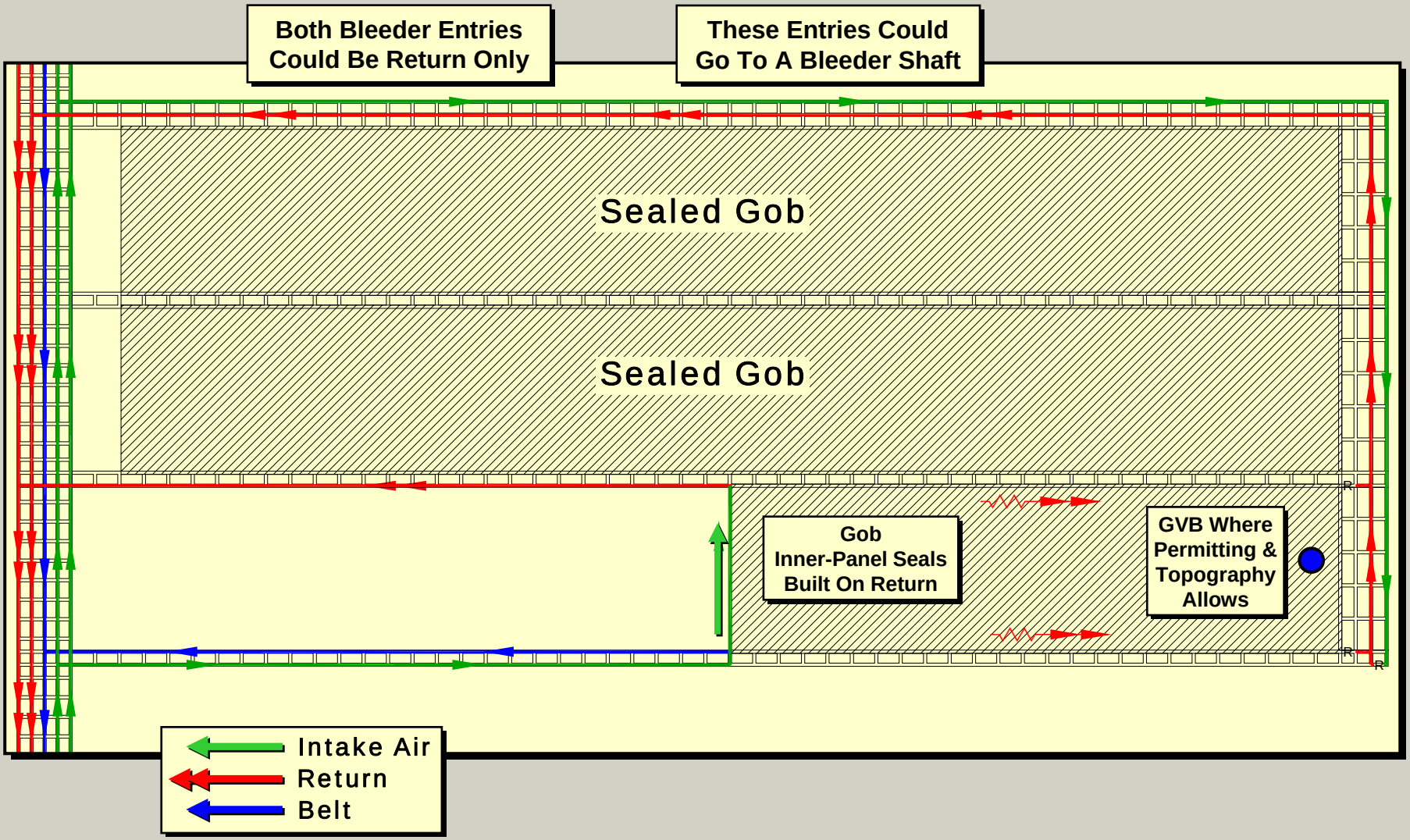
Recommended - Limited Use Western Bleeder System

If Progressive Ventilation Is Allowed

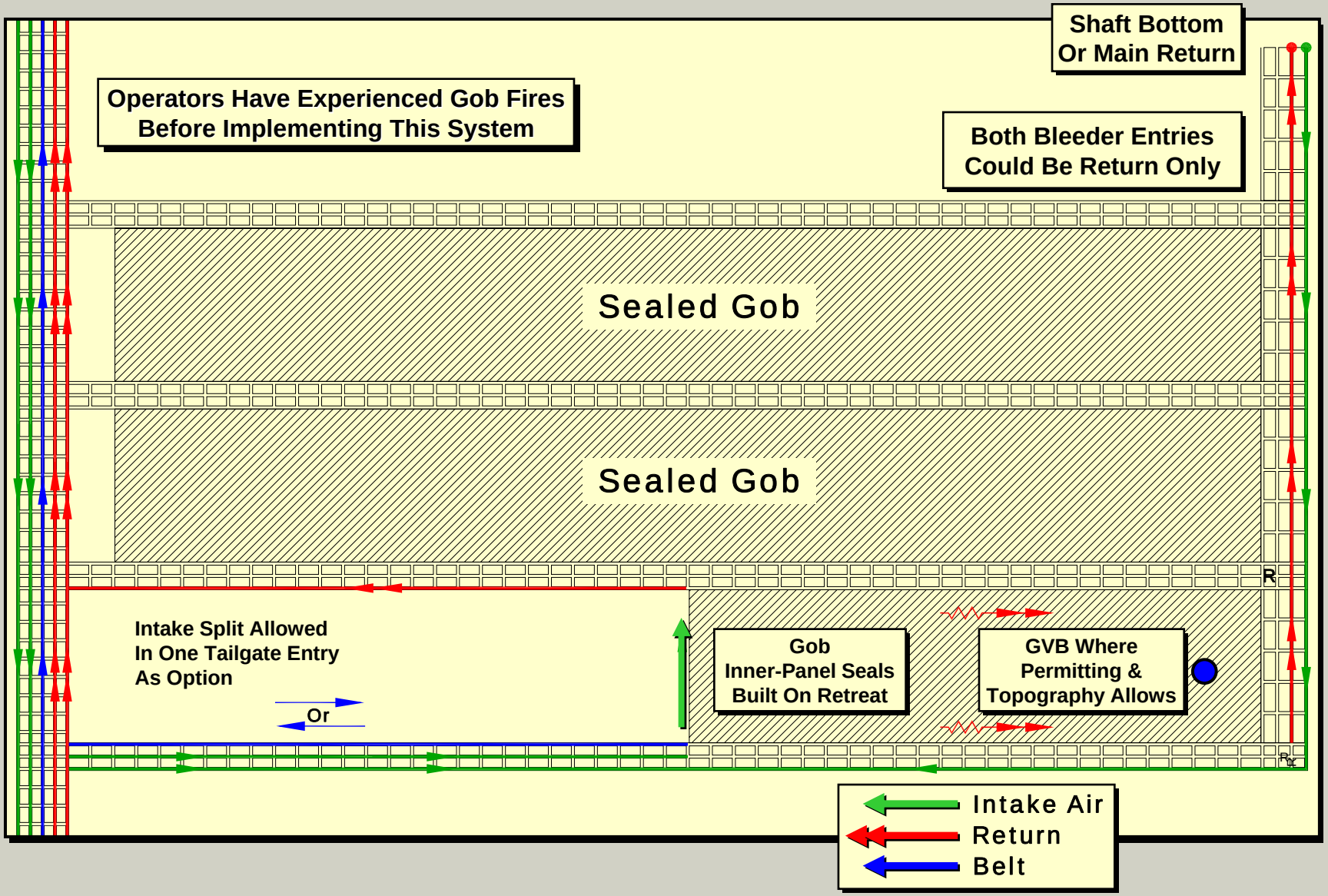
Similar to Bleeder Book Fig. 40



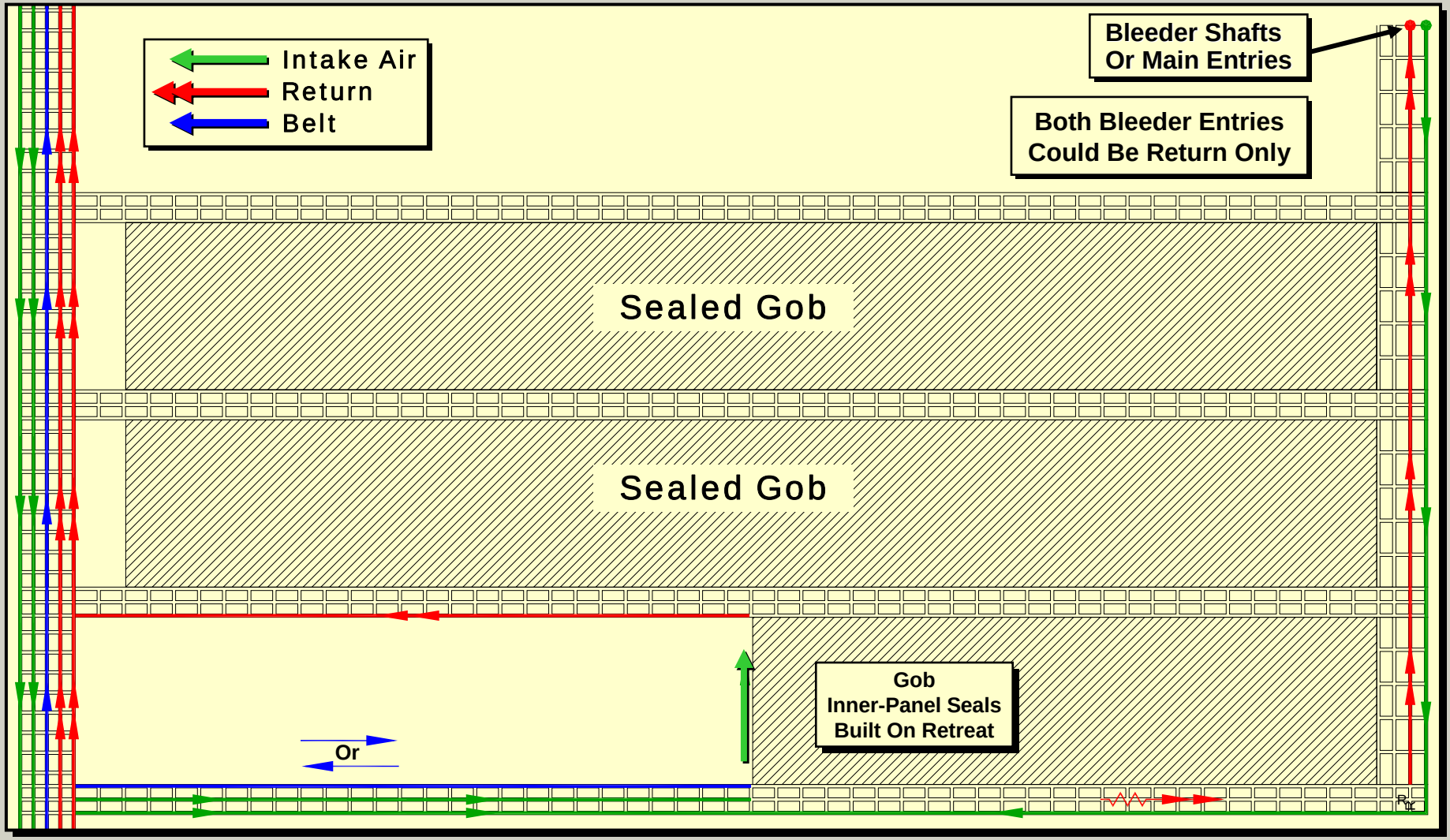
Typical Western Bleeder System
With Inner-Panel Sealing – 2 Entry
Designed For Spontaneous Combustion Protection



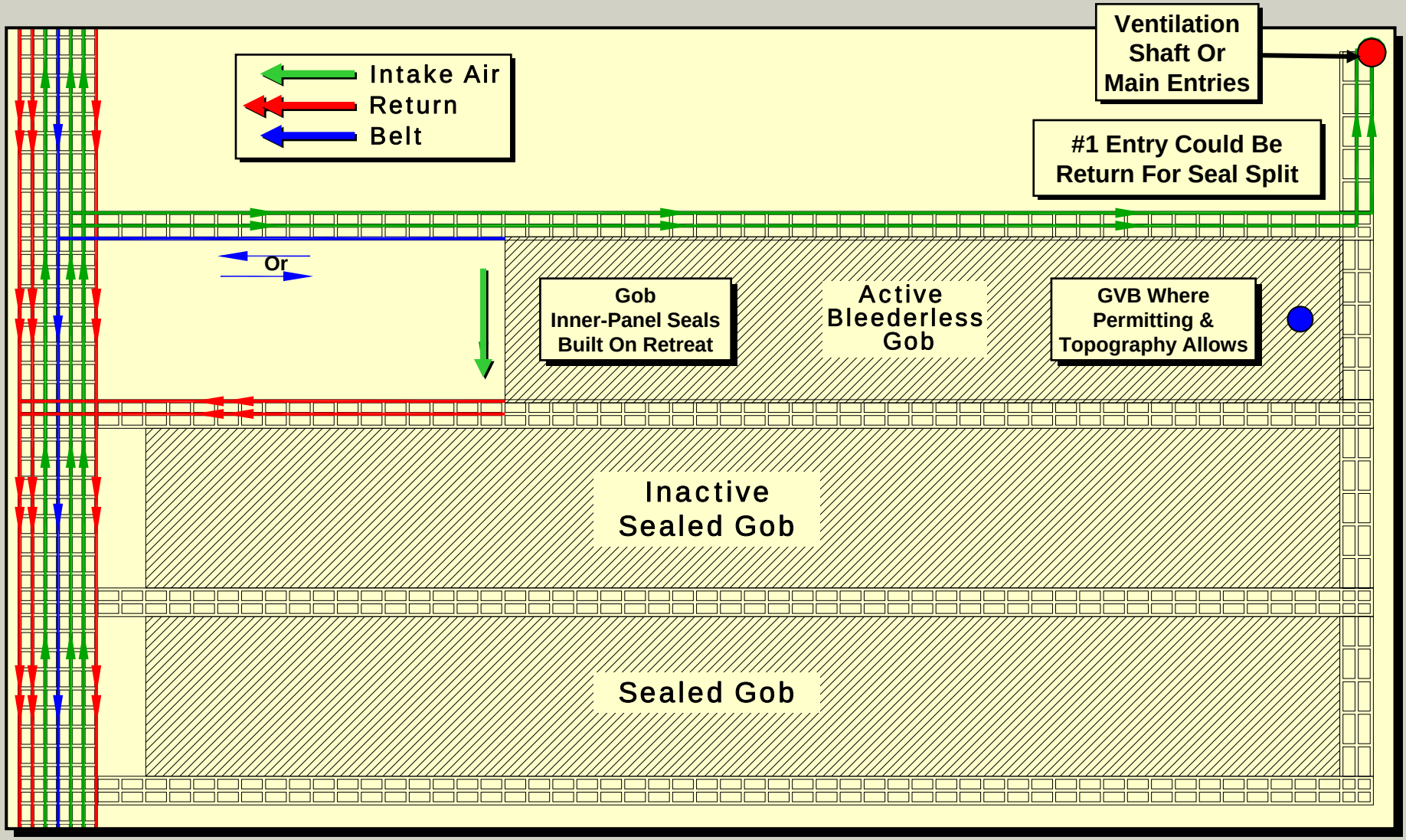
Typical Western Bleeder System
With Inner-Panel Sealing – 3 Entry
Designed For Spontaneous Combustion Protection



Typical Western Bleeder System
With Inner-Panel Sealing – Headgate Fringe Only
Designed For Spontaneous Combustion Protection



Typical Western Bleederless System
Allows Mitigation Of Methane & Spontaneous Combustion



Rulemaking vs. Policy For Changes

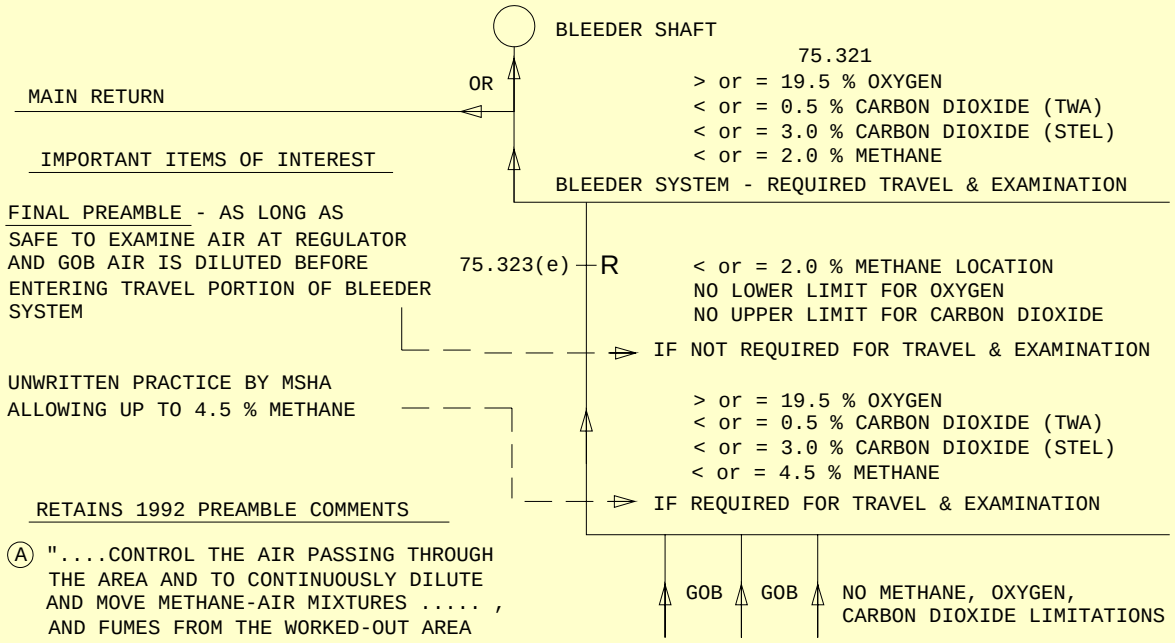
- **Policy**
  - **Location Of 75.323(e) Point Is Defined By Current Regulations**
  - **Another Split Of Air Or Leakage Air That Affects Location**
  - **Construction Of Alternative Seals – 75.335(a)(2)**

Rulemaking vs. Policy For Changes

- **Rulemaking**
  - **Changing Definition Of Air Ways By 75.323(e) Location**
    Return Designation Versus Bleeder System
    (Bleeder Book – Figs. 27, 28, 31, 32, 38, & 39)
  - **Air Quality Internal To The Gob And Bleeder Flow**
    Current Regulations Have No Defined Limits
  - **Air Quality In Sealed Areas**
    Normal Is Typically Not Known By Regulatory Agencies
  - **Air Quality Other Than Methane At 75.323(e) Location**
    Preambles Clearly Define This Area
  - **Current Regulations For Bleeder/bleederless System:**
    - **1. Tailored To The Mine For Specific Conditions**
    - **2. Described In Ventilation Plan**
    - **3. Moves Methane Away From Active Mining Faces**
    - **4. Weekly Examination Determines Effectiveness**
    - **5. Designed To Be Sealed If Ineffective**

Rulemaking vs. Policy For Changes

1996 REGULATIONS



Ⓐ "....CONTROL THE AIR PASSING THROUGH THE AREA AND TO CONTINUOUSLY DILUTE AND MOVE METHANE-AIR MIXTURES ..... , AND FUMES FROM THE WORKED-OUT AREA AWAY FROM ACTIVE WORKINGS...."

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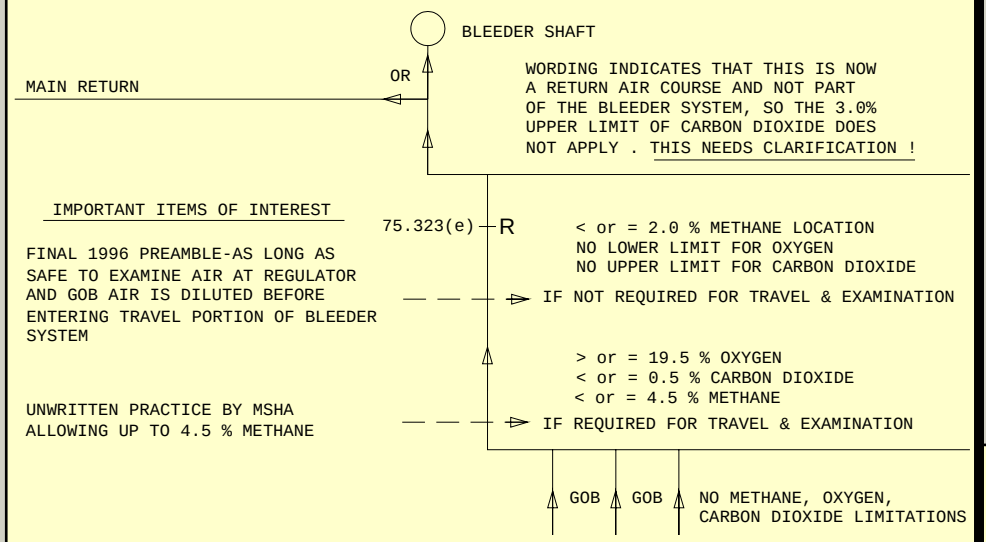
Ⓒ "THIS PERMITS THE OPERATOR TO TAILOR THE BLEEDER SYSTEM TO THE CONDITIONS IN THE PARTICULAR MINE WHERE IT WILL BE USED.

Ⓓ "THE FINAL RULE DOES NOT RETAIN.... IN SUCH A WAY AS TO CONTROL AIRFLOW THROUGH SUCH GOB, TO INDUCE DRAINAGE OF GOB GAS FROM ALL PORTIONS OF SUCH GOB AREAS, AND TO MINIMIZE THE HAZARD FROM EXPANSION OF GOB GASES DUE TO ATMOSPHERIC PRESSURE CHANGE."

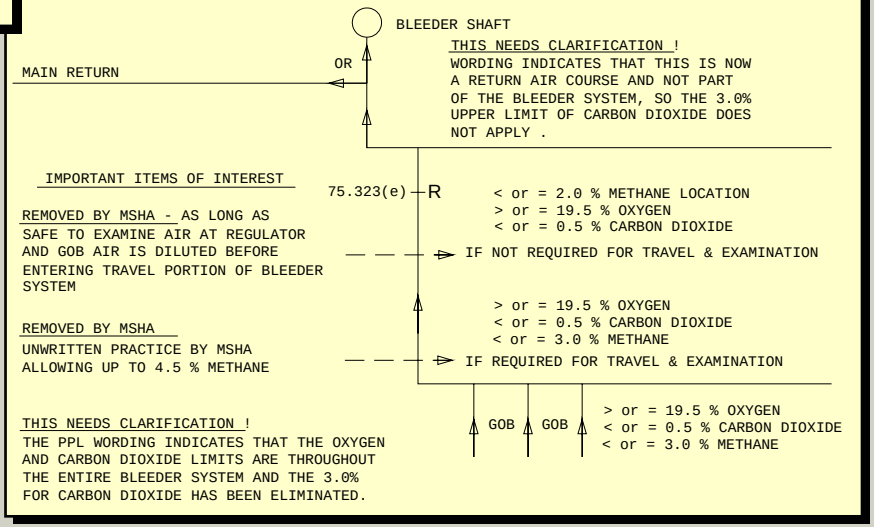
Ⓔ "MSHA RECOGNIZE THE NEED TO REDUCE THE FLOW OF OXYGEN TO AREAS WHERE THERE IS A LIKELIHOOD OF SPONTANEOUS COMBUSTION,"

Rulemaking vs. Policy For Changes

75.323(e) PPL # P06-V-3 DATED 05/12/2006

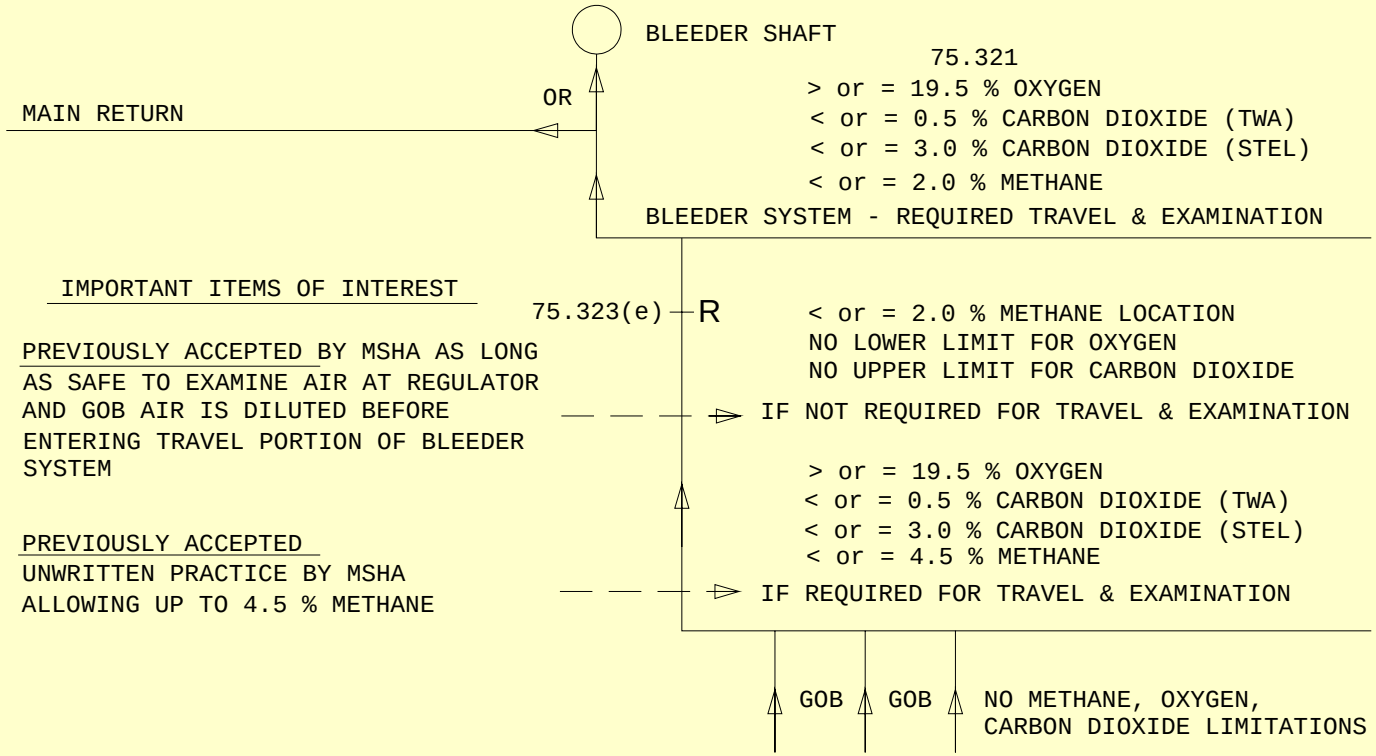


75.334(b)(i) DRAFT PPL DISTRIBUTED 09/2006



Rulemaking vs. Policy Changes

75.334(b)(i) PPL - Work Group Recommends 1996 REGULATIONS DEPICTED OR MSHA SHOULD PURSUE RULEMAKING FOR ANY CHANGES



Review Of Critical Issues That Affect Western U.S. Mine Ventilation Systems

- Designed To Reduce Oxygen In Gobs
  - CO_2 Levels From Oxidation Or Elevated Methane Levels
- **Oxygen** Is The Only Component Of The "Fire Triangle" That Can Most Effectively Be Controlled To Prohibit Spontaneous Combustion And Explosive Potential Of Methane
- Design For Gob Gases To Enter Bleeder System vs. Active Workings
  - Fringe Ventilation Or Progressive Ventilation
- Designed To React To Possible Spontaneous Combustion
- Inner-Panel Seals Function Different Than Mine Life Seals
  - Designed For Convergence
- Sealed & Active LW Gobs Contain Reduced Air Volume
  - Air Exchange From Atmospheric Pressure Change Reduced

Technical Consensus Recommendations For The Future

- World-Wide Review Of Prudent Gob Ventilation & Sealing Practices Is Recommended, As The Principles Of Physics & Chemistry Transcend Political Boundaries
- Ventilation System Design Should Result From Site-Specific Risk-assessments & Could Result In A Bleeder/Bleederless System Tailored For That Mine
- Progressive Ventilation Of Western Bleeder Systems
  - –Bleeder Book - Special Situation
- Mixing Chambers To Dilute Methane Outside Of The Gob
  - –Fresh Air With Inherent Oxygen Content Added To Dilute Methane In Controlled & Monitored Process
- Gob Isolation Stoppings/Seal Design Is Critical Issue To Western Mines
  - –Design & Purpose Different Than Mine Life Seals

Technical Consensus Recommendations For The Future (continued)

- Inner-Panel Seals With Natural Gob Convergence Should Have Lower Structural Requirements
- Mine Life Seals In Very Low Methane Production Mines Should Have Lower Structural Requirements
- Seals & Balance Chambers For Inertized And/Or Monitored Gobs Should Also Have Minimal Structural Requirements
- Mine Life Seals Where Atmosphere Is Below Explosive Potentials Should Have Lower Structural Requirements
- Mine Life Seals Where Atmosphere Is Being Inerted Should Have Lower Structural Requirements

Seal Construction

- **Oxygen Is The Only Component Of The "Fire Triangle" That Can Most Effectively Be Controlled To Prohibit Spontaneous Combustion And Explosive Potential Of Methane**
- **Western Mine Operations Build Hundreds Of Seals Annually**
- **These Seals Have Proven To Be Effective And Proactive Measures To Prevent Spontaneous Combustion**

Seal Construction - continued

- **Goals For Seal Construction:**
  - **Prevent Oxygen Inflow Into The Sealed Area**
  - **Protect Workers From Events In The Gob**
  - **Recommend Joint Standards Committee Comprised Of Industry, Government, Academia, Manufacturers To Establish Seal Requirements, Specifications And Application Criteria Based On Joint Standards Committee Consideration**
    - **Models for Committee Standards Development: ASTM, SME, ASCE, SAE**
  - **Interim Seals Should Be Designed As Per Current PIB, By A Registered Engineer Competent In The Field**

Seal Construction - continued

- **Goals For Seal Construction:**
  - **Existing Seals, And Seals Constructed By Approved Designs Prior To Final Standards Committee Decision Shall Be Accepted Under A "Grandfather" Principle, Without Further Stipulations**
  - **Standards Committee Should Determine The Safety Factor That Operators Can Utilize In Design, Based On Variability Of Materials And Construction Practices For Each Seal Design Or Type To Insure The Minimum Acceptable Structural Outcome**
  - **Industry Needs Definite And Specific Guidelines From Which To Work So That All Mines Are Working Toward A Consistent Goal**

Conclusion

We Appreciate The Opportunity To Express Our Informed And Unified Opinions On This Critical Area Of Concern

We Further Appreciate The Preparation That MSHA Has Done To Make This Meeting Happen

Attachments – CMA Comments and Schematics of Regulatory Process

- **CMA Comments on 75.334(b)(1) PPL Draft**
- **Work Group Schematics of Review of Regulatory Process**

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October 13, 2006

Mine Safety and Health Administration
Coal Mine Safety and Health
1100 Wilson Boulevard
Room 2409
Arlington, VA 22209

Re: Draft Program Policy Letter
Application of 30 CFR Part 75.334(b)(1) to Bleeder Systems
RIN 1219-AB51

Dear Sir or Madam:

On the behalf of the member companies of the Colorado Mining Association, I am submitting the following the comments on MSHA's Draft Program Policy Letter (PPL), "Application of 30 CFR 75.334(b)(1) to Bleeder Systems." We appreciate the opportunity to comment on the PPL to further enhance safety within the mining industry. We also appreciate MSHA's cooperation with the National Mining Association in extending the comment period.

One primary concern of not only the Colorado mine operators, but many western underground operators, is that application of the PPL as written will have a detrimental effect on underground mines with a demonstrated history of spontaneous combustion. Safe mining and ventilation plans have been developed and approved by MSHA where limited ventilation practices are used to reduce the potential for spontaneous combustion within a gob area. This concern is reiterated in the following specific comments related to the draft PPL:

- The PPL contradicts the language in the preamble to the 1992 and 1996 ventilation regulations. The preamble clearly states that mine operators are required to design a tailored bleeder system based upon the conditions in the particular mine where the bleeder system is used. Due to unique conditions and methane liberation, the type of bleeder system used and its design "is best handled through the approved ventilation plan".
- The PPL appears to negate 30 CFR 75.334(f) {mines with demonstrated history for spontaneous combustion} which allows for alternatives to 30 CFR 75.334(a) and 75.334(b).
- In mines where spontaneous combustion is a potential problem, thoroughly ventilating the gob is contrary to proven spontaneous combustion mitigation practices of limiting and reducing ventilation within the gob, allowing the gob to become inert. Mine operators are convinced that requiring additional ventilation through the gob by increasing the pressure differential across the gob has and will continue to result in mine fires which is a significant and substantial diminution of safety to the miners. Stable and limited

ventilation within gobs has proven to be an effective means for reducing the potential for spontaneous combustion.

- Unlike the established inlets and outlets to the gob where the airflow direction is typically consistent, internal air paths within the gob area are constantly changing, preventing accurate specification of air direction at any given point of an internal air path.
- Weekly examination of internal air paths within the gob area to determine air direction causes serious and significant safety concerns for the examiner. Internal air paths are not locations where personnel should be located, both from a health and a safety prospective. This type of examination would unnecessarily expose the examiner to hazardous roof conditions and potential air quality issues, resulting in a diminution of safety to the miners.
- Current regulations require evaluation of the bleeder system at established monitoring or measurement point locations. The PPL inappropriately expands the regulation without going through appropriate rulemaking procedures to require checking of internal air paths.
- Requiring a maximum of 3.0% methane at inlets, outlets, and within internal air paths of the gob can reduce the effectiveness of established methane drainage systems, both horizontal and vertical. Methane drainage has proven to be a very safe and effective system for removing gases from the gob and away from active workings. Dilution of the methane with ventilation will render these proven systems useless.
- The PPL attempts to defeat the laws of physics by requiring immediate dilution of methane within the bleeder air course to a maximum of 2.0%, without introducing additional splits of air. Dilution of methane requires injection of additional air, however, this air should not be required to be routed though the gob. Dilution of the methane at appropriate locations within a bleeder system without changing the location of the designated 2.0% location appears to be more appropriate rather than attempting to overcome nature's gas laws.
- Increasing air volumes through the gob to increase the oxygen air quality to at least 19.5% in bleeder entries areas where persons must travel again is counterproductive to reducing the potential for spontaneous combustion. The current regulations recognize the potential for reduced air quality in a bleeder system by allowing the District Manager to grant evaluation points within a bleeder system when potential hazards are encountered. The decreased oxygen content in a bleeder entry is not always the result of methane, since other gases (carbon monoxide and carbon dioxide in particular), can account for the reduced oxygen levels.
- The PPL inappropriately establishes a carbon dioxide air quality requirement of 0.5% in bleeder systems. Current regulations allow for a Time Weighted Average (TWA) of 0.5% and a Short Term Exposure Limit (STEL) of 3.0%. A TWA of 0.5% is significantly different from an exposure of 0.5%.
- Establishing a maximum methane concentration of 3.0% is contrary to established practices of allowing more than 3.0% at various locations within a bleeder system. With current monitoring and communication capabilities, higher concentrations of methane within a bleeder system still allow for a sufficient safety factor.
- Establishing a maximum methane concentration of 3.0% in a bleeder system is also inappropriate since a regulation is effectively being made without going through the required rulemaking procedures.
- The Western coal mines that are spontaneous combustion prone or prone to elevated oxidation rates tend to consume oxygen versus have lower oxygen levels by dilution from methane. Carbon dioxide is the resulting gas, which has lower allowable limits than methane, and yet, poses a significantly less concern.

The current regulation allowing up to 3.0% carbon dioxide on a Time Weighted Average is necessary in bleeder entries and the current Program Policy Letter on the 75.323(e) location eliminates the ability to dilute carbon dioxide and low oxygen in the bleeder entries by introducing additional dilution air. The 75.323(e) policy should only address where the 2.0% location is and have nothing to do with the designation of the bleeder entries.

The illustration below depicts the concern of elevated carbon dioxide and low oxygen behind seals that are located in the bleeder entries and included in the gob air at the 75.323 (e) measurement point.

NORMAL AIR (Minus small Gases)	NORMAL AIR (Minus small Gases)
79% Nitrogen 21% Oxygen	79% Nitrogen 21% Oxygen
to	to
CONSUMPTION	DILUTION
to	to
79% Nitrogen 11% Oxygen 10% Carbon Dioxide	71.1% Nitrogen 18.9% Oxygen 10% Methane
to	to
LEAKAGE AND 323(e) (Allowed 0.5% CO_2)	LEAKAGE AND 323(e) (Allowed 2.0% CH_4)

This results in 4 times the amount of leakage from seals or from the airflow at the 75.323(e) point for methane versus the effect of consumption of oxygen that produces carbon dioxide. That is the reason that additional dilution air is added into the bleeder system for protection from high carbon dioxide or low oxygen. This is done to improve air quality in the bleeder system.

MSHA's New Video - This new video creates confusion when trying to use it to understand "primary internal airflow paths" as discussed in the draft PPL. At numerous locations, the moving airflow depicts air of the caved gob and mixing with other airflow paths that would be associated with the perimeter of the caved gob. That is what would be expected of a bleeder system, except the air quality is not governed by any regulations, and more important, should not be governed by new program policies. In fact, the current regulations do not govern any of the airflows indicated, except where the flow exits a 75.323(e) point. If the right entry in the headgate is <u>required</u> for travel to access the bleeder, then that entry would be limited to 4.5% methane by long-term and current practice.

Two splits of air that are labeled as "primary internal airflow paths" (Tailgate statement that air could be going inby and the right entry of the headgate) have been

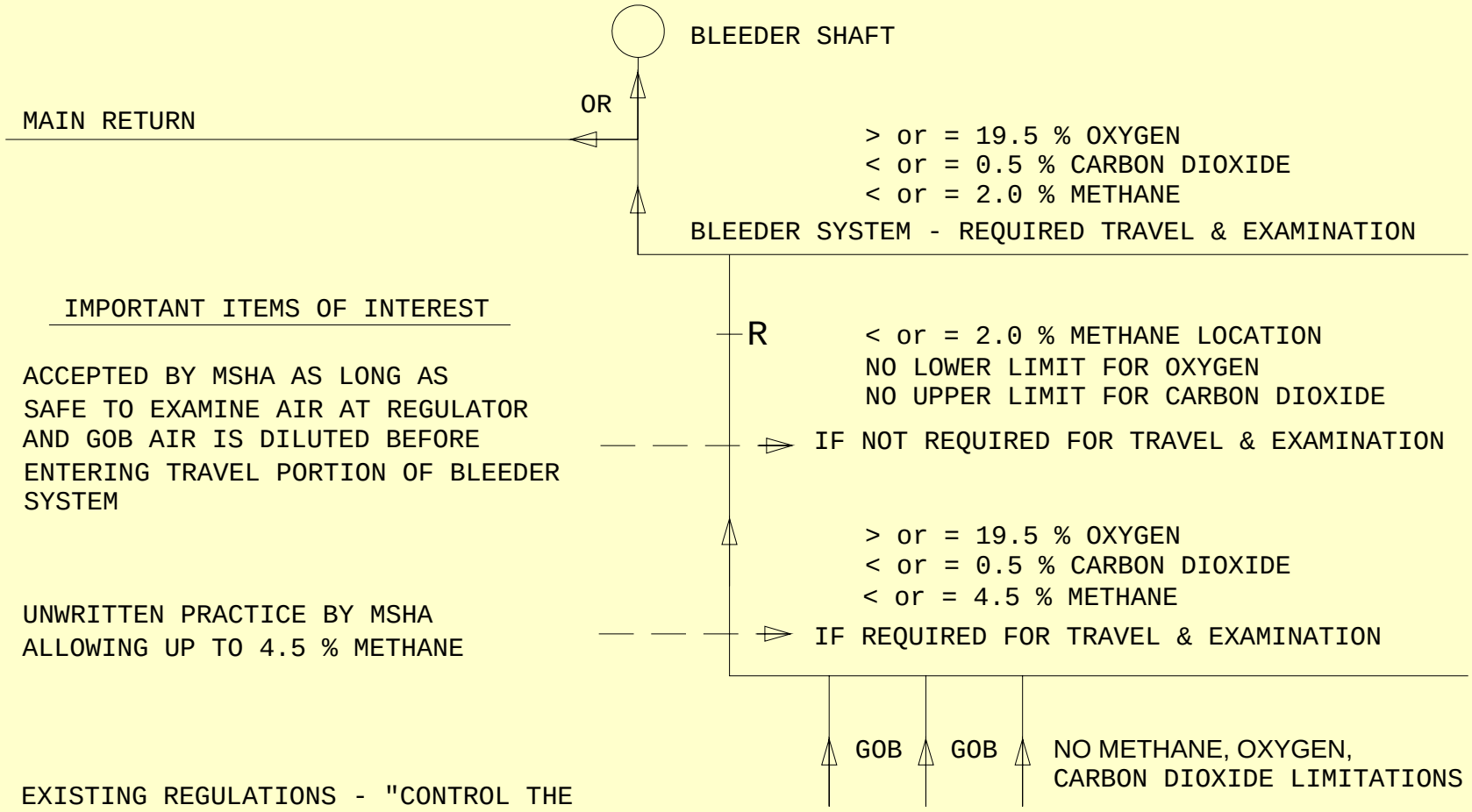
called "sweetners" by MSHA Ventilation Experts in recent court cases, which influenced the Judge's decisions. They are now properly depicted as splits of air entering the gob and part of the expectations of controlling bleeder airflow. They were also properly depicted in approved ventilation plans, yet conflicting expectations existed among MSHA personnel. These types of misunderstandings are significant and indicate why these new interpretations should be put on hold. Now, not even the Review Commission can concur on these issues, as indicated by two recent decisions.

Again, we appreciate the opportunity to submit comments from concerned operators on the draft PPL. We encourage MSHA to fully evaluate the comments and to incorporate the comments into a revised PPL that will help ensure the safety of all miners.

Respectfully submitted,

Stuart Sanderson
President
Colorado Mining Association

BEFORE 1988 PROPOSED REGULATIONS



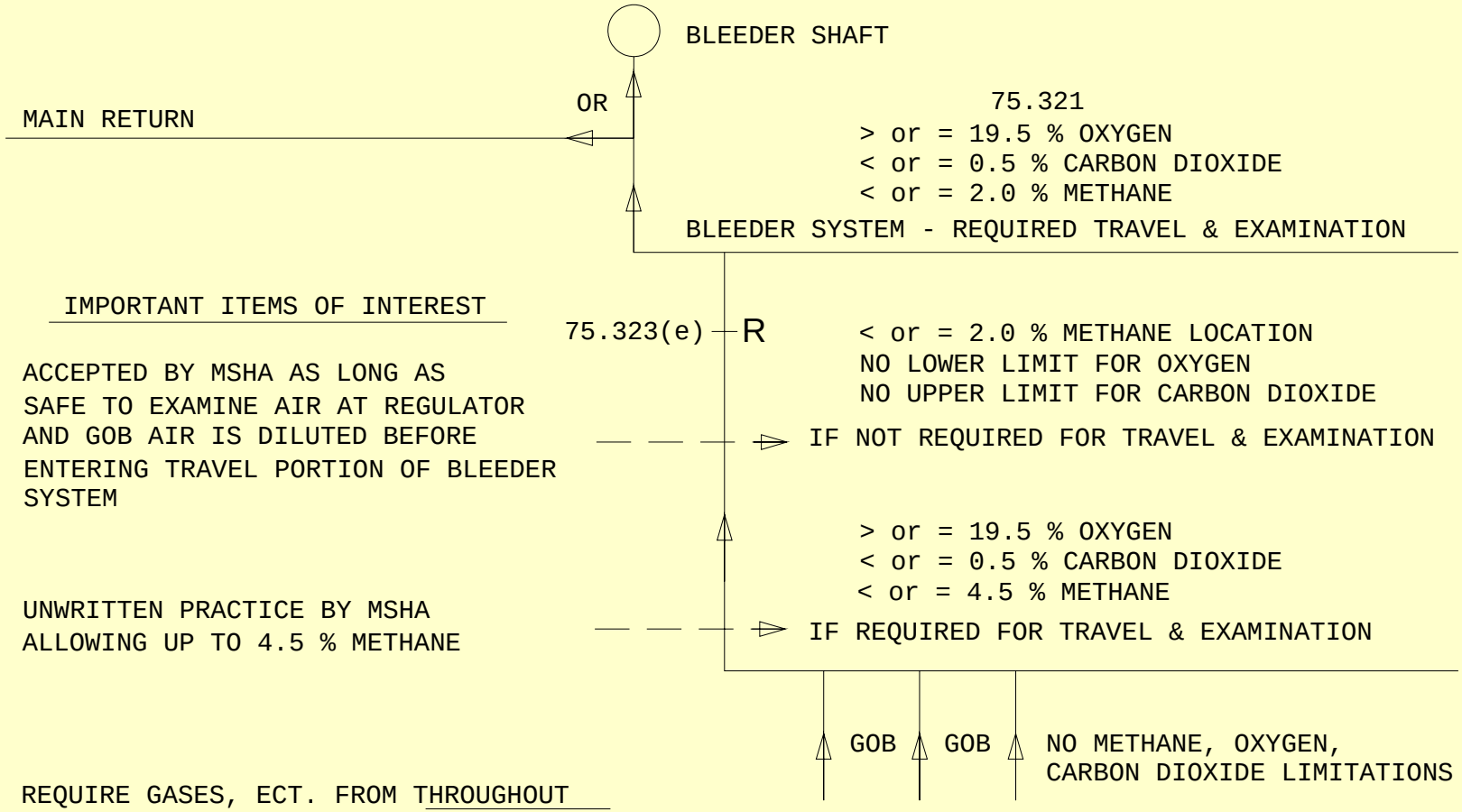
IMPORTANT ITEMS OF INTEREST

ACCEPTED BY MSHA AS LONG AS SAFE TO EXAMINE AIR AT REGULATOR AND GOB AIR IS DILUTED BEFORE ENTERING TRAVEL PORTION OF BLEEDER SYSTEM

UNWRITTEN PRACTICE BY MSHA ALLOWING UP TO 4.5 % METHANE

EXISTING REGULATIONS - "CONTROL THE ACCUMULATION OF METHANE"

1988 PROPOSED REGULATIONS



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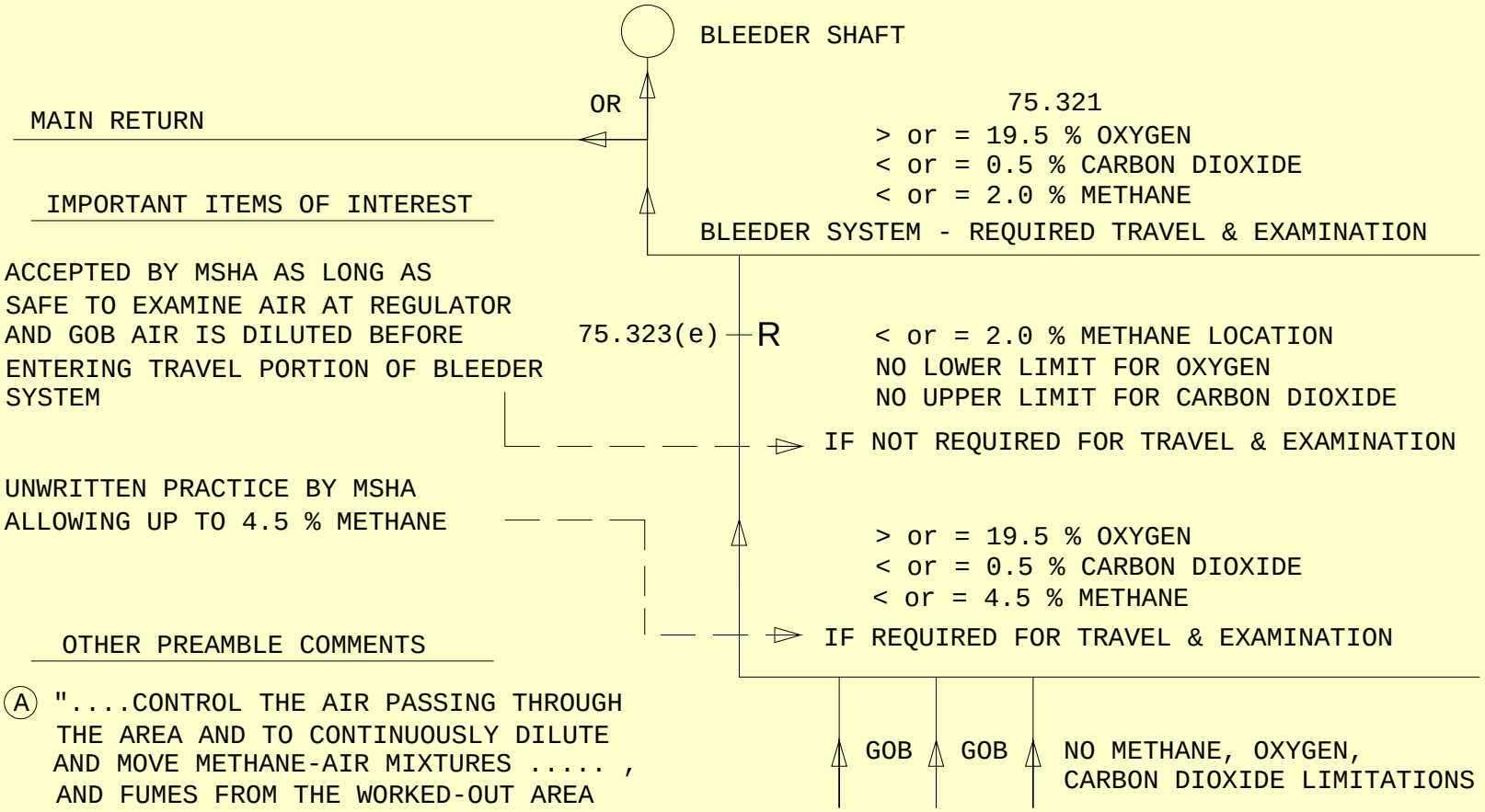
REQUIRE GASES, ECT. FROM THROUGHOUT SUCH AREA BE ROUTED TO RETURN OR SURFACE OR SEALED.

ELIMINATE TERM " BLEEDER ENTRIES " AND USE TERM " BLEEDER SYSTEM "



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OTHER PREAMBLE COMMENTS

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(B) "....REQUIRES THAT THE BLEEDER SYSTEM USED BE SPECIFIED IN THE APPROVED VENTILATION PLAN."

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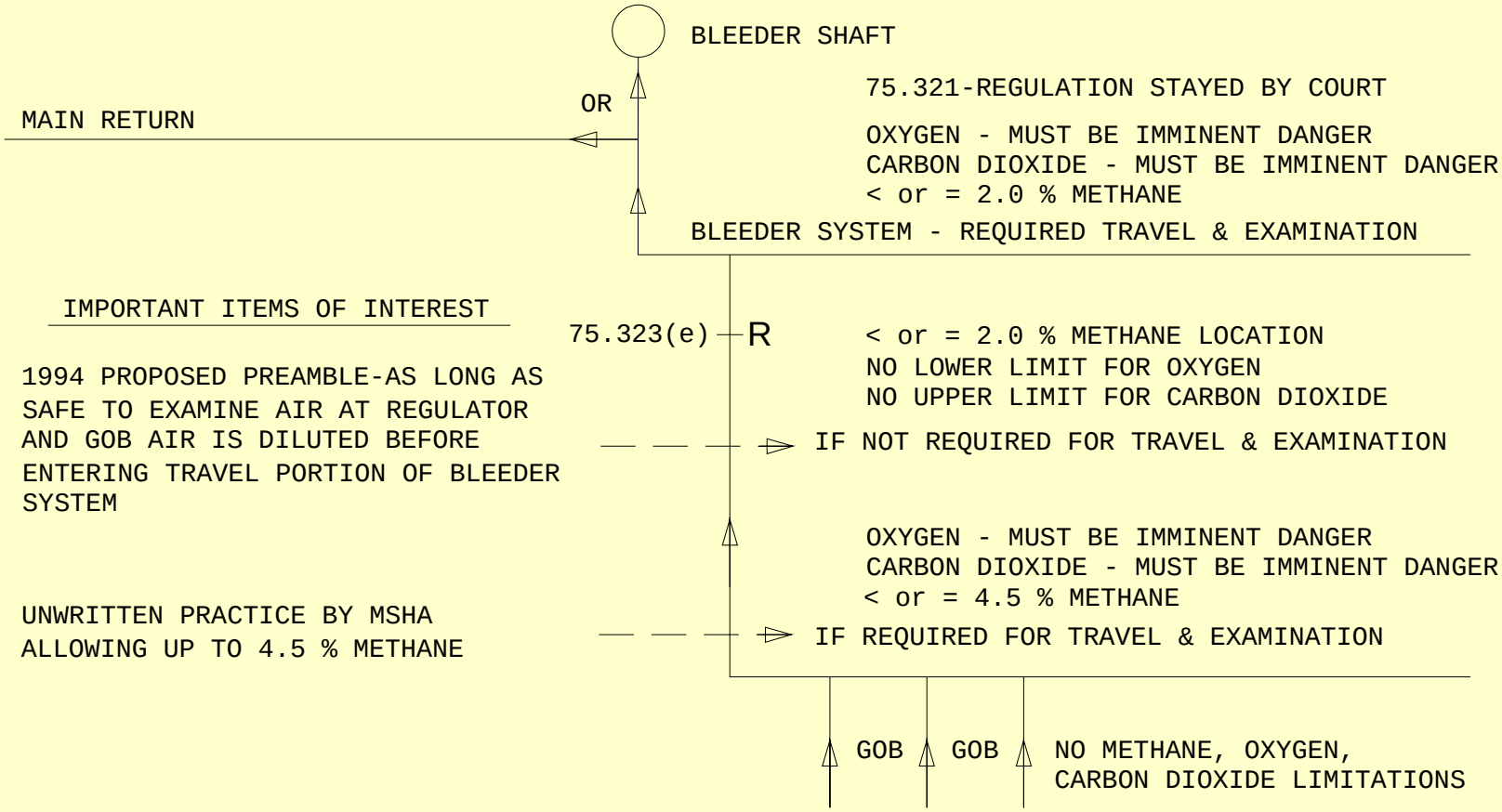
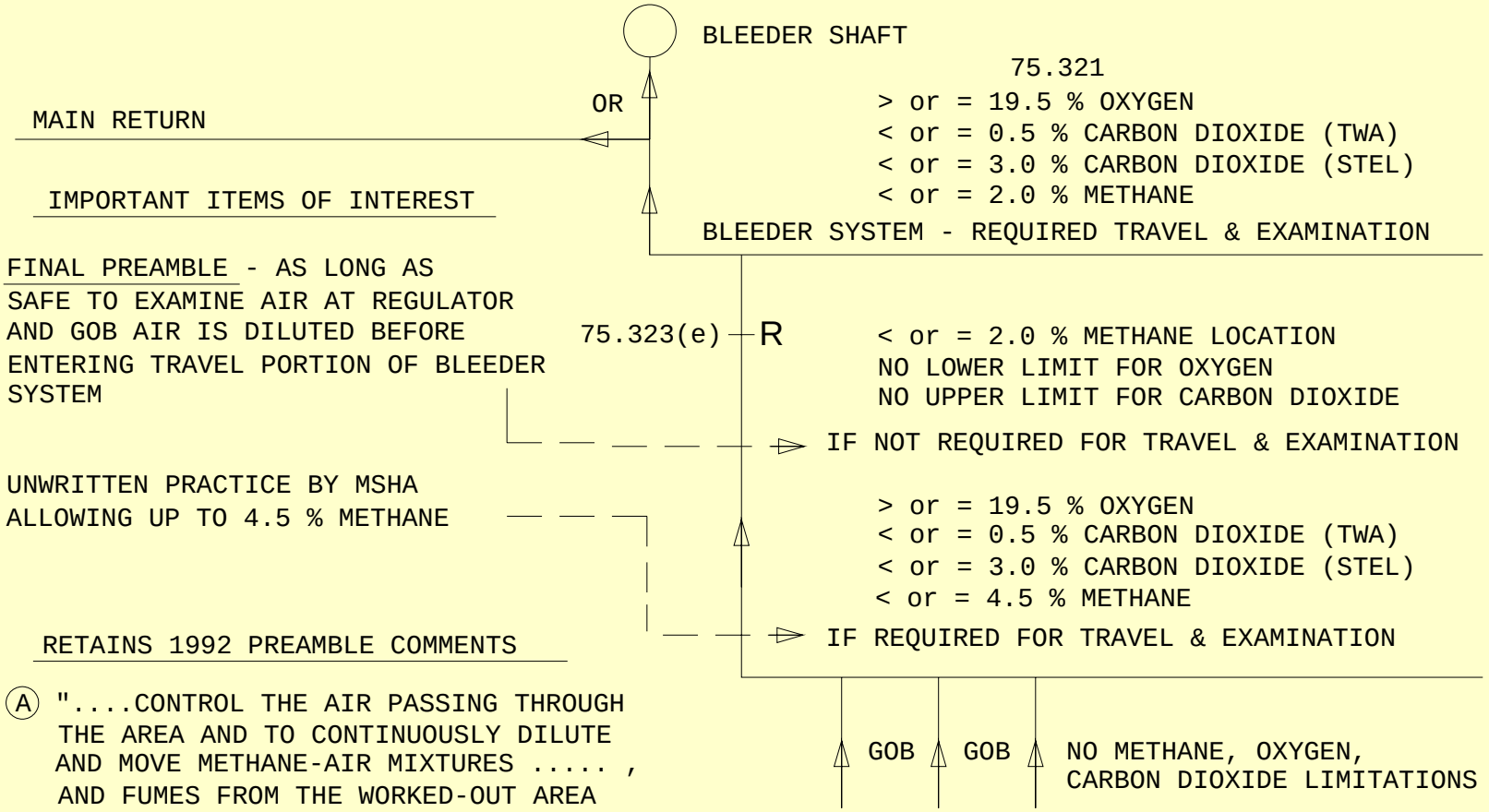
(D) "THE FINAL RULE DOES NOT RETAIN.... IN SUCH A WAY AS TO CONTROL AIRFLOW THROUGH SUCH GOB, TO INDUCE DRAINAGE OF GOB GAS FROM ALL PORTIONS OF SUCH GOB AREAS, AND TO MINIMIZE THE HAZARD FROM EXPANSION OF GOB GASES DUE TO ATMOSPHERIC PRESSURE CHANGE."

(E) "MSHA RECOGNIZE THE NEED TO REDUCE THE FLOW OF OXYGEN TO AREAS WHERE THERE IS A LIKELIHOOD OF SPONTANEOUS COMBUSTION,"

1992 TO BEFORE 1996 REGULATIONS WITH CIRCUIT COURT OF APPEALS ON BLEEDER AIR QUALITY



1996 REGULATIONS



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FINAL PREAMBLE - AS LONG AS SAFE TO EXAMINE AIR AT REGULATOR AND GOB AIR IS DILUTED BEFORE ENTERING TRAVEL PORTION OF BLEEDER SYSTEM

UNWRITTEN PRACTICE BY MSHA ALLOWING UP TO 4.5 % METHANE

RETAINS 1992 PREAMBLE COMMENTS

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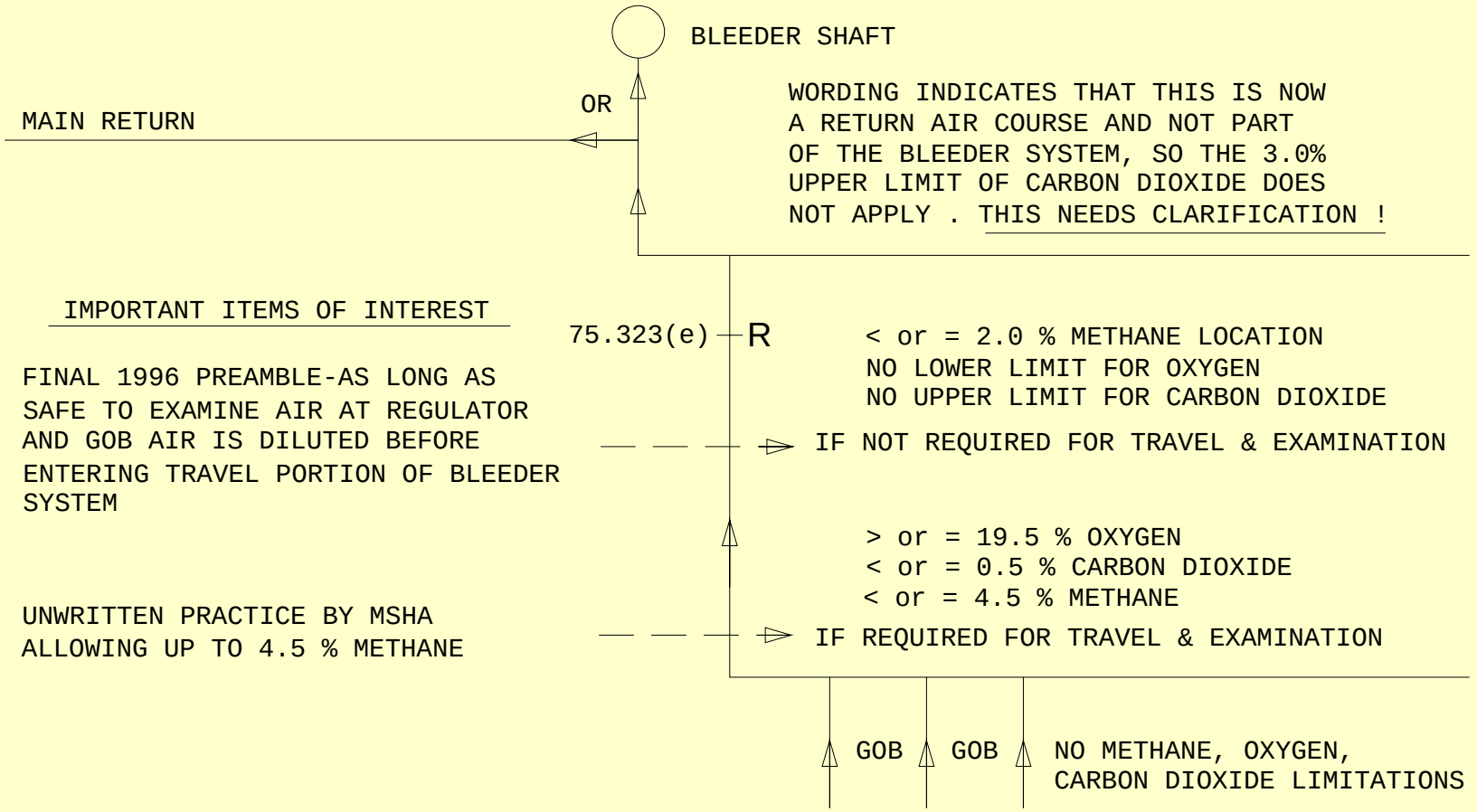

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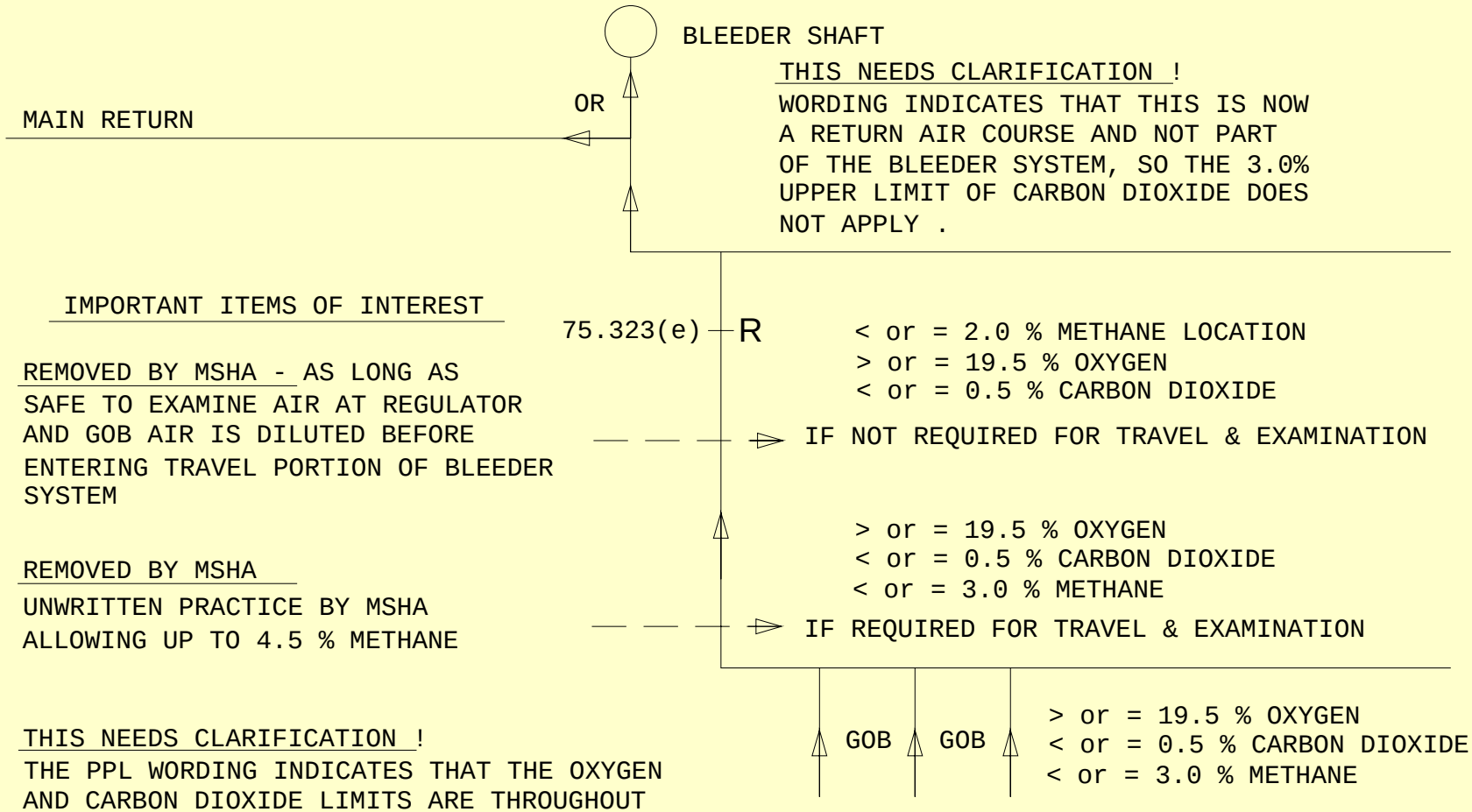

75.334(b)(i) PPL - Work Group Recommends 1996 REGULATIONS DEPICTED OR MSHA SHOULD PURSUE RULEMAKING FOR ANY CHANGES