Date: March 2, 2017

To: Chris Bone, Director--PRAD

From: Darren French, Actuary

Subject: ME-PIMS Mass Withdrawal Assumptions

Background

ME-PIMS was initially built incorporating an assumption that a primary driver of large losses to PBGC's multiemployer program was due to mass withdrawal of all employers from multiemployer plans. ME-PIMS models the chance a plan will undergo mass withdrawal stochastically based on six factors: (a) plan size; (b) ratio of inactive to active population; (c) ratio of assets to benefit payments and expenses; (d) ratio of the accumulated credit balance in the funding standard account to employer contributions; (e) ratio of market value of assets to vested actuarial liabilities; and (f) ratio of current year to previous year contribution amounts. The formula was developed and parameters estimated based on data that largely pre-dates the Pension Protection Act. In recent years the primary driver of losses to the PBGC multiemployer program has been projected rates of insolvency and the sensitivity of the projections to the mass withdrawal liability assumption has been relatively small. However the average annual projected number of mass withdrawals has consistently overstated recent experience and the Buck peer review recommended PRAD examine this assumption. Thus PRAD, via contract with Lynchval and its subcontractor Horizon, requested Horizon review the drivers of mass withdrawal for purposes of eliminating or revising the mass withdrawal liability assumption.

Horizon gave results of a preliminary review of mass withdrawal drivers in November 2015 based on a study of plans that were maintained in PBGC's inventory of mass withdrawn plans that were not yet insolvent as of June 30, 2014. PBGC asked Horizon to follow up with additional data that reflected each of the factors currently reflected in the model in 2016. This memo reviews the two pieces of the Horizon study and recommends changes to ME-PIMS

Horizon First-Round Survey Observations:

1. Horizon's first-round study compared plans based on industry, number of active participants, asset balance, funded percentage, contributions per active participant and number of employers for each of the five plan years prior to mass withdrawal. Based on my review of the Horizon first-round study, there appear to be several factors somewhat significantly correlated with the mass withdrawals that have occurred to date. I would note that the common theme appears to be "small plans" (which is one factor we currently use, in some way or another, in our current estimates):
    a. Small number of contributing employers to the plan (note that information on the number of contributing employers is a fairly new information item on the 5500 – this reporting requirement started with the 2008 5500 filing so the ratios that can be gleaned from Horizon's report are likely very understated, as they did not adjust the ratios for plans that went into mass withdrawal prior to 2008 – only about 1/4 of the

plans studied went into mass withdrawal prior to 2008, but Horizon's denominator included all plans studied). We didn't look at the year-to-year decline in such numbers as a factor in the first-round survey, but did in later reviews.

b. Small number of active participants and rapid decline in active population in the years preceding mass withdrawal.
c. Low asset values (yet, surprisingly, low funded ratios appear to be a relatively minor factor).
d. Greater than typical asset declines in years preceding mass withdrawal.

2. The Industry data also had significant variations – the plans in Construction and Entertainment had by far the lowest incidence of mass withdrawal, and those in Manufacturing and Retail had the highest incidence rates.

3. Plan size is one of the six factors related to mass withdrawal we utilize in the current PIMS model. The other five factors we currently model as related to mass withdrawal were analyzed in the second report. See below for results and observations.

Horizon Second-Round Survey Observations:

1. The ratio of active participants to inactive participants for all multiemployer plans that reported information in 2012 was approximately 0.96. For plans that incurred mass withdrawal, the ratio in the second year prior to mass withdrawal was approximately 0.35. This disparity in the active to inactive ratio is in line with both Horizon's and my expectation before the analysis was done.

2. The ratio of benefit payments to operating expenses for all multiemployer plans that reported information in 2012 was approximately 20.3. For plans that incurred mass withdrawal, the ratio in the second year prior to mass withdrawal was approximately 10.2. Because Horizon suspected that much of this disparity is due to plans that enter mass withdrawal being smaller and having higher relative expenses, they also compared the benefit to expense ratio based on plan size, as measured by the market value of assets. Their observation was that, while smaller plans generally do have lower benefit to expense ratios, the mass withdrawn plans have lower ratios in every size category, indicating higher relative expenses, which is what I would anticipate for a plan entering mass withdrawal.

3. For plans that enter mass withdrawal, contributions declined 8.6% on average in the fourth year prior to their entry into mass withdrawal. This significant decrease is in line with what Horizon would have expected. However, in the three years prior to mass withdrawal, contributions as reported on the Form 5500 increased significantly, by 8.4%, by 33.5%, and by 10.0%, respectively. While many plans experienced a decline in reported contributions, several others had reported contributions significantly increase, some by as much as five times over the prior year, which skews the average. While Horizon did not anticipate the increase in contributions for some plans, it does make sense to them (and to me), because the contributions reported on Form 5500 include the lump sum settlement of withdrawal liability payment obligations from withdrawn employers, which would be expected to increase significantly prior to mass withdrawal. Because there is no entry on Form 5500 or any attachment that separately identifies withdrawal liability payments from other contributions (except possibly the audit report), they could not identify how much of the increase was due to withdrawal liability

payments. However, these results show that declining reported contributions, followed by a sharp increase in reported contributions, may be an indicator of a looming mass withdrawal.

4. Horizon does not think that a meaningful conclusion can be drawn based on the number of employers, because 75% of the mass withdrawn plans did not report this information on Form 5500 (I think this is because most of them went into mass withdrawal prior to when that information was required to be reported on the 5500). However, see below for information gleaned from 2014 to 2016 mass withdrawals, based on information compiled by MEPD.

5. For the ratio of the credit balance/(funding deficiency) to employer contributions, the percentage of mass withdrawn plans with relatively large funding deficiencies (indicated by the 13 of 48 plans having a negative ratio) is higher than the percentage of all plans with funding deficiencies (indicated by the 110 of 1,188 total plans with a negative ratio). This indicates that there is some correlation between a plan having a funding deficiency and entering mass withdrawal. However, even though the mass withdrawn plans are more likely to have low or negative ratios, they are still well distributed based on this metric, indicating that the credit balance is not likely to be a strong predictive variable. Based on Horizon's experience, they believe that the funding standard account is rarely considered by multiemployer stakeholders when making fundamental decisions about the plan, such as whether to withdraw from the plan, and I agree with that assessment.

Review of 5500s for Recent Mass Withdrawals

1. We reviewed the last several years' 5500 filings for the plans on MEPD's list of new mass withdrawn plans during the period 2014-2016. MEPD reported 16 such plans. Four of the 16 went into mass withdrawal only upon insolvency, and another three of the 16 were projected to go insolvent within 2 to 4 years of going into mass withdrawal.

2. Approximately 9 or so of the 16 plans appear to have terminated because all of the formerly contributing employers no longer had an obligation to contribute to the plan. It is difficult to know whether (a) the contributing employers found a way out of the plan (and/or went out of business) or (b) the plan principals simply determined that it was no longer in the participants' best interest to continue an active plan, and the parties worked together to stop all ongoing regular contributions.

3. Another three or so of the 16 appear to have gone into mass withdrawal as a result of the plan trustees voting to terminate the plan.

4. Thus, it appears that more plans go into mass withdrawal prior to insolvency than at insolvency, at least based on the last three years of (admittedly scant) data. However, the average of those situations was approximately 4 plans per year, or about 0.4% of plans each year.

Summary and Recommendations

1. PPA changed plan and employer incentives. The need to terminate a multiemployer plan to avoid excise taxes on funding deficiencies, and thus typically trigger a mass withdrawal, no longer exists post-PPA. Thus plans that now go into mass withdrawal likely have somewhat different reasons and circumstances than in the past.

2. I note that the rates of mass withdrawal that we have experienced to date are significantly lower than what our model appears to be projecting. The Projections report shows an annual average rate (over the first 10 years) of 3.1% per year. This rate is only for the sample population, which oversamples troubled plans, but weighting it up to the total population, we are still projecting an annual average rate of 1.8% and declines over time. This compares with about 0.4% per year actual to date on average. Thus, we are recommending scaling down the probability of mass withdrawal that results from the formula by 75% to be more in line with post-PPA experience.

3. Some of the new information we are gleaning from the latest analysis may suggest that we may be able to refine the formula that assigns probabilities to pre-insolvency mass withdrawal – in particular, there appears to be some fairly clear and possibly predictive relationship between the number of contributing employers and the likelihood of pre-insolvency mass withdrawal. I recommend we study the model of mass withdrawal and reparameterize in a future version of PIMS.

4. I note that PIMS currently assumes that EVERY plan that goes into insolvency goes into mass withdrawal at that point (if it hasn't already been projected to occur prior to insolvency) which is not entirely consistent with plan information we are gaining through the partition and suspension process (regarding plan assumptions as to what will happen absent a suspension/partition). We should continue to work on this issue and potentially refine the analysis and model, subject to a determination of whether it could potentially materially affect the projections.

5. It is probably worthwhile to review recent mass withdrawal and termination activity in insolvent plans. My understanding is that some insolvent plans are not terminating (and thus not triggering mass withdrawal), and also continuing accruals. To date, there are only 6 such plans, but we know that several more anticipate this process. I recommend PBGC undertake a research project to better understand this activity and believe one is currently underway.

Finally, I suggest that we review our assumptions on contributions and withdrawal liability payments, under both mass withdrawal and insolvency scenarios. I am told that ME-PIMS assumes 40% of the contributions in the year prior to mass withdrawal are assumed to be paid indefinitely into the future and does not model lump sum settlements of withdrawal liability. I believe ASD assumes no new withdrawal liability payments, other than currently scheduled withdrawal liability payments and is looking at establishing "collectability" assumptions that vary for terminated and non-terminated plans. I recommend that we state the current PIMS assumption in the next report and continue to investigate harmonizing the PIMS and booking assumptions, where appropriate.